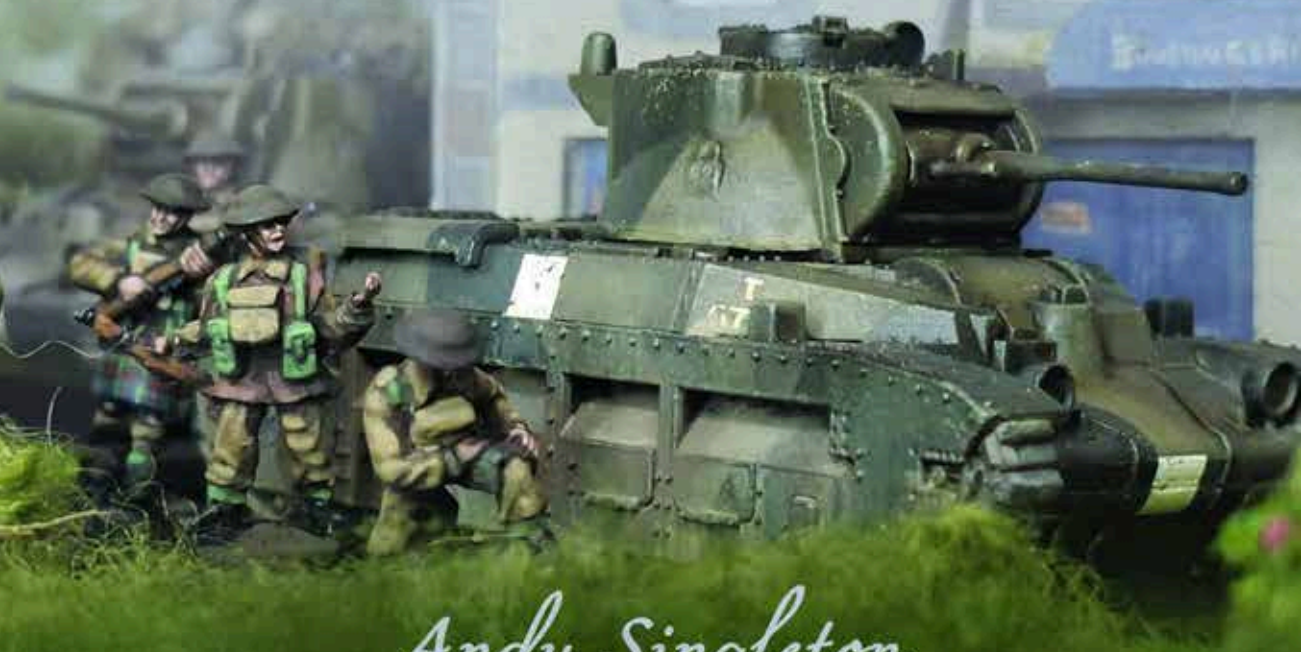
Painting Wargaming Models

ARMOURED VEHICLES IN EUROPE & NORTH AFRICA 1939-1942



Andy Singleton

Painting

Wargaming Models

ARMOURED VEHICLES

IN EUROPE, AND NORTH AFRICA 1939–42

Also by Andy Singleton and in print with Pen & Sword Books:

Painting Wargaming Figures: Early Imperial Romans (2019)

Painting Wargaming Figures: WWII in the Desert (2019)

Painting Wargaming Figures: Rome's Northern Enemies (2020)

Painting Wargaming Figures: Axis Forces on the Eastern Front (2021)

Painting Wargaming Figures: Allied Forces in North-West Europe, 1944–45 (2022)

Painting Wargaming Figures: Allied Forces in Blitzkrieg Europe, 1939–1940 (2023)

Painting Wargaming Models: Armoured Vehicles in Europe, 1943–1945 (2024)

Modelling Battle of Britain Fighter Aircraft (2025)

Painting Wargaming Models

ARMOURED VEHICLES

IN EUROPE, AND NORTH AFRICA 1939–42

Andy Singleton

Pen & Sword
MILITARY
AN IMPRINT OF PEN & SWORD BOOKS LTD.
YORKSHIRE – PHILADELPHIA

First published in Great Britain in 2026 by
Pen & Sword Military
An imprint of
Pen & Sword Books Ltd
Yorkshire – Philadelphia

Copyright © Andy Singleton, 2026

Print ISBN 978 1 03611 668 2
ePUB ISBN 978 1 03611 669 9
ePDF ISBN 978 1 03611 671 2

The right of Andy Singleton to be identified as Author of this work has been asserted by him in accordance with the Copyright, Designs and Patents Act 1988.

A CIP catalogue record for this book is available from the British Library.

All rights reserved. No part of this book may be reproduced, transmitted, downloaded, decompiled or reverse engineered in any form or by any means, electronic or mechanical including photocopying, recording or by any information storage and retrieval system, without permission from the Publisher in writing. NO AI TRAINING: Without in any way limiting the Author's and Publisher's exclusive rights under copyright, any use of this publication to "train" generative artificial intelligence (AI) technologies to generate text is expressly prohibited. The Author and Publisher reserve all rights to license uses of this work for generative AI training and development of machine learning language models.

Typeset in Gill Sans 12/16 by SJmagic DESIGN SERVICES, India.
Printed and bound in India by Replika Press Pvt. Ltd.

The Publisher's authorised representative in the EU for product safety is Authorised Rep Compliance Ltd., Ground Floor, 71 Lower Baggot Street, Dublin D02 P593, Ireland.
www.arccompliance.com

For a complete list of Pen & Sword titles please contact

PEN & SWORD BOOKS LIMITED
George House, Units 12 & 13, Beevor Street, Off Pontefract Road,
Barnsley, South Yorkshire, S71 1HN, England
E-mail: enquiries@pen-and-sword.co.uk
Website: www.pen-and-sword.co.uk

or

PEN AND SWORD BOOKS
1950 Lawrence Road, Havertown, PA 19083, USA
E-mail: uspen-and-sword@casematepublishers.com
Website: www.penandswordbooks.com

Contents

Acknowledgements		vii
Introduction		ix
Chapter 1	Getting Started	1
Chapter 2	British Vehicles: Camouflage and Markings	23
Chapter 3	French Vehicles: Camouflage and Markings	47
Chapter 4	Polish Vehicles: Camouflage and Markings	63
Chapter 5	German Vehicles: Camouflage and Markings	73
Chapter 6	Italian Vehicles: Camouflage and Markings	101
Chapter 7	Transfers	123
Chapter 8	Weathering	131

Acknowledgements

I would like to extend my deepest, sincerest thanks to all those who have supported me in creating this series of books over the years, especially though to my Mum and Dad, my commissioning editor Philip Sidnell and, most importantly, to all those of you who have purchased the books.

Thank you.

Introduction

The period between the mid-1930s and the mid-1940s covers an absolutely huge generational shift in both armoured vehicles and in armoured warfare as a whole. Vehicles changed from tiny two-man tankettes smaller than the average car of today to 50+ ton heavy tanks spearheading armoured breakthroughs across vast fronts.

The tank came into its own in the early part of the Second World War. Largely consigned to infantry support roles with the possibility of exploiting breakthroughs the way cavalry had done a generation or two earlier, within a few months doctrines were being rapidly shaken up to embrace armoured vehicles as a rapid strike force to punch through enemy defences.

This translates into a fascinating period for wargamers and collectors. While the latter part of the war probably attracts the lion's share of attention with its selection of heavy tanks and big guns, the 1939–43 period covers so much development that you can have some very exciting games in a variety of theatres with an eclectic mix of fairly strange vehicles.

For modelling too, the period allows you a very wide latitude of colour schemes and finishes, even if you were to stick to simply collecting one nation's forces. The British range of camouflage patterns in the desert is a real challenge to paint, the French variety of colours is pretty huge and a real rabbit hole of research, and the weathering and finishing options just with grey Panzers are hard to exhaust.

This book is intended as a companion volume to my other book *Painting Wargaming Models: Armoured Vehicles in Europe, 1943–1945* available through all the same sources as this book. As such, I will not be covering the forces of the United States or the Soviet Union here as their paint schemes largely remained the same throughout this period

and their repetition would have resulted in the exclusion of some of the nations covered here.

Additionally, while winter camouflage is covered in *Armoured Vehicles 1943–1945*, the desert painting guides for the *Afrika Korps* also work by simply substituting sand paint for white.

As ever, these books are intended for the absolute beginner, but I hope they can bring something to the table for hobbyists of all experience levels as all the guides are intended to be quick, simple and a way to get you through piles of potential efficiently while still leaving you with a handsome-looking collection.

I hope you are able to take these guides to push your own skills too, experimenting and growing in confidence with the various techniques covered and the paints used. Never be afraid to experiment and see what new ways of painting you can come up with as we never stop learning!

Now let's get some models painted!

Getting Started

Between the two world wars the level of technological advancement was really quite staggering. Aircraft went from being canvas-covered biplanes to fast, cannon-armed aluminium monoplanes, radar entered service, machine guns became lighter and easily portable, and tanks had begun to evolve into incredibly powerful war machines.

In a similar vein, there is a huge and ever increasing array of hobby products on the market. This array can be quite overwhelming, even if you have been involved in the hobby for a long time. I'll also attempt to cut through some of the technical terminology too, giving a bite-size description of what is required for a few of the most commonly used techniques.

As a solid rule of thumb, when it comes to buying tools you're better off buying better quality. These may prove more expensive, but will work out cheaper in the long run and the results will be more than worth it. That said, it's probably also worth scouting out the internet and club mates or friends for reviews to see if it sounds like something you would find useful and fulfils your specific tastes and needs.

Readers of the other books in this series will be familiar with the following chapter; however, for completeness I've repeated it here for those new to the hobby as well as updating some of the information in line with changes to it.

PLASTIC, METAL OR RESIN?

The Second World War is probably the most widely supported period for models in any and all scales, with thousands of different products available. Generally speaking, for gaming purposes these are provided in either white metal, resin or hard and soft plastics. Recently thermoplastic has started to appear as a material from several manufacturers, and this combines the features of both metal and plastic models although it requires assembly with superglue.

Once a rarity outside of 20mm wargaming, plastic is rapidly becoming the most common material for wargaming modes. This is doubly true for vehicle kits, with a staggering array of models available in a myriad of sizes and scales. Kits range in complexity from simple wargaming kits of a few parts to high-end collector's pieces with hundreds of components. As a rule of thumb, it's easy to distinguish these by noting the manufacturer.

If the kit is produced by a wargaming company it will typically be a simple build, whereas a kit produced by a scale modelling company will be more complex. Some manufacturers, though, are starting to produce simpler kits aimed at the wargaming market. If you are in doubt it's worth checking the website Scalemates. This invaluable resource contains reviews and instructions for a vast array of kits.

Probably the most common material for the production of vehicle models in sizes smaller than 15mm is lead-free metal, although kits can be found in all different sizes in this material, especially among older or smaller ranges. Metal can be tricky to work with and can require significant cleaning up and removing moulding lines along the sides of parts as well as cleaning up areas with an excess of metal called flash. This is a simple task and requires scraping along the line with the blunt side of a blade or a quick sanding down with some files; again, I'll cover that a little later.

Metal models require assembling with superglue or an equivalent, and larger models such as artillery and cavalry will require a degree of patience as they can quickly become somewhat frustrating if you try to rush putting them together. When assembling any model though, patience and test-fitting will always pay off.

Resin is another common material used in the production of vehicle kits. It can be found in both printed and cast varieties, although working with either is largely the same. It's also worth giving resin a wash in warm soapy water to remove any mould-release agents that can hinder assembly and painting. Resin can have large casting lugs attached to parts

and these will need removing with a razor saw. Other than that, resin is much like working with metal and requires superglue to assemble. Many kits actually combine metal and resin parts and these can be glued together easily. It's worth pointing out that resin dust can be toxic so it is worth wearing a mask when sanding and filing it.

Thermoplastic appears very much like a soft plastic at first glance, although is far harder and more resilient and not prone to bending or flaking paint. Thermoplastic is incredibly durable, but unfortunately this also makes the material very hard to clean up. If you attempt to remove moulding lines with a file you will end up simply tearing the model rather than sanding the lines away. Instead use a very sharp knife blade and carefully clean up the part. You can also use very fine wet and dry paper, at least 1000 grit, to polish the part to a smoother finish. Thermoplastic models are a type of resin so will not bond with normal plastic glues and you will need to use superglue.

KNIVES, CUTTERS AND FILES

The first thing you'll need to do, unsurprisingly, is to get the component parts of your model ready for assembly and clean away any residue from the manufacturing process. This can take several forms, but the most common are flash and mould lines which form when the model is being cast in its mould. These appear as either prominent lines around a part or as chunks or 'worms' of excess material, especially on edges and undercuts of the component. These casting imperfections can appear in any material and removing them will massively improve the appearance of the finished model, especially when you are using the dry brush techniques.

Hobby knife

These broadly fall into two types: those with replaceable blades such as the ubiquitous X-Acto hobby knife and the Stanley knife. Either one of

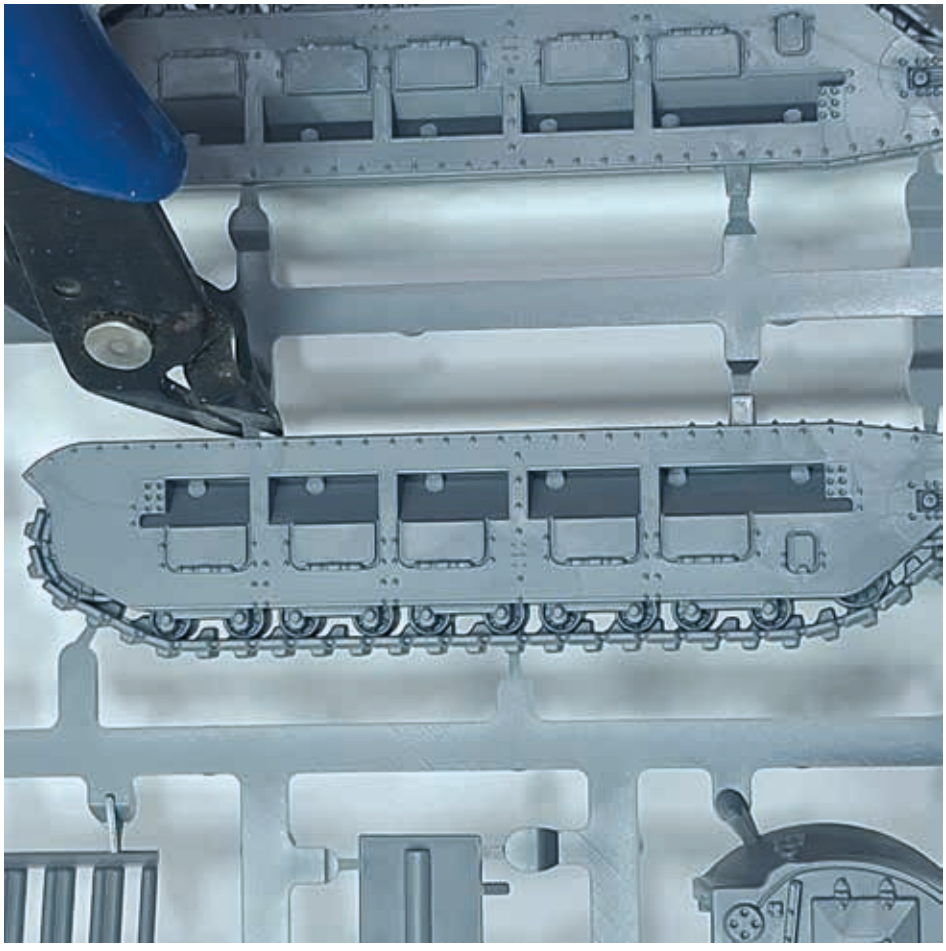
these will probably be your most frequently used tool in preparing your models as the sharp side of the blade can be used for cutting things, while the blunt edge can be used to remove mould lines by simply scraping it down them a few times. This works as the blunt edge is more forgiving of slips and follows the contours of the details well.

Which type of knife you get is entirely up to you but I'd recommend one of each, especially as they can be found pretty much anywhere that sells tools or hobby supplies at good prices. The replaceable blades of the X-Acto style allow different styles and shapes of blade to be fitted as well as allowing you to simply replace the blade once it becomes dull. The slender, sharp blades do have their limits, however, can blunt quickly when working with metal and may struggle with cutting through thicker plastic sprues as well. They are very sharp though and give you a lot of control, especially for scraping off moulding lines or the remains of tabs after using side cutters. The Stanley knife is handy if you need to do some heavier duty cutting, such as trimming parts off for a conversion that side cutters can't perform as cleanly as you need.

Side cutters

Also known as sprue cutters, these are vaguely similar to scissors but with a shorter blade and more powerful, tensioned action. As the name suggests, these are good for cutting things. Perfect for removing plastic

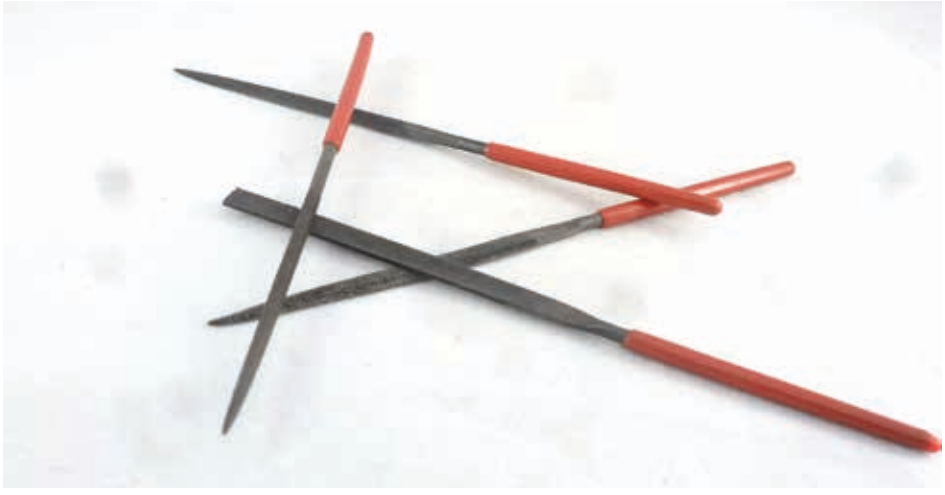
parts from their carrying sprue, it's best to trim the part leaving a small stub of plastic that you can then trim with a knife or file. Also handy for metal, these can also be used for removing casting lugs or parts from moulding blocks. Sprue cutters can be found in the majority of model shops, both on and offline. I'd recommend getting



maybe two sets and having one for metal and one for plastic if you're likely to work on a lot of both materials as the set for metal will blunt faster than the set used on plastics.

FILES

Files are another immensely useful tool and can be found in most tool/hardware shops as well as in model and hobby shops. Ideally what you want is a set of jeweller's files or needle files. These typically come in sets of several different files, with each being a different shape to allow



Excess plastic is removed with a file.

the cleaning of most parts of a model. A file with a blade more than a centimetre wide will probably prove to be too big for modelling purposes so aim for something quite fine. These are great tools for removing mould lines and getting rid of the contact points of sprue gates.

GLUES

Now that we have established what the models are made from and have trimmed and cleaned the parts, it's time to start sticking things together. For this we'll need to ensure we are matching the correct bonding agent to the right material. Very broadly speaking, the most commonly encountered glues are PVA, superglue, cement and solvent. PVA is a sticky paste and fine for attaching foliage and netting to models, but is not much use beyond that.

Superglue, or cyanoacrylate to give it its proper name, is a rapid-curing cement that bonds most materials. Given the rapidity of the bonding

Here glue is being applied to the join.

process, superglue works best when used in small controlled areas. I tend to apply it with a cocktail stick or equivalent, and apply small dabs to each part that will be bonded. It's best to get the parts joined and then come back and carefully add more superglue if you feel the bond needs it rather than flood an area that will take forever to dry and potentially make a terrible mess of your model too.

Adhesives for plastics such as those from Revell, Tamiya and Humbrol are all solvent-based to varying degrees and have a fairly wide range of drying times. In addition, there are also solvents designed with modelling in mind such as Plastic Weld, which are far more potent products. All of these function on the basis of partially melting the two bonding surfaces of plastic into a very strong join. They won't, however, bond metal, resin or plastic to metal or resin. For this you will still need superglue.

Finally we have cements. These typically come supplied in tubes and are very sticky and foul-smelling. While eventually they can give a decent bond, they are for the most part quite inferior to the purpose-designed adhesives already mentioned and should probably be avoided.

It's also worth checking the drying times for various glues. Superglue can have an activator that will speed up the drying times for when you need an even quicker bond. Alternatively, especially when working with small parts, more of a gel-type glue is very good as this will hold the part in place and also allow you to adjust the positioning and fit.

FILLER

Gaps are something of an inevitability when working with multipart kits. Sometimes these are small and can be hidden or ignored, especially with smaller scale models; however, if they are in prominent areas they will require treatment.

If you do decide to fill the seams and gaps, then broadly speaking there are two types of filler you can use: epoxy putty and model filler. The key distinction between these is that filler comes pre-mixed, ready to apply

Here the putty is being applied to the gap.

The excess filler is removed with a damp cotton bud.

usually in a tube not too dissimilar to toothpaste, and epoxy putty is made by mixing two compounds together.

Model filler is pretty easy to find in most brick and mortar hobby shops, and is widely manufactured by the likes of Humbrol, Revell, Vallejo and the like. Filler is very easy to use: simply squeeze a small amount onto some card and then apply the filler to the necessary area with a cocktail stick. Once dry, it's easily sanded with files or wet and dry paper. Most fillers take a few hours to dry before they are ready to be sanded and shaped.

Acrylic fillers such as those produced by Vallejo can be applied to a gap, allowed to set for forty-five minutes or so and then the excess removed with a damp cotton bud, or allowed to fully harden and then sanded with files or wet and dry paper.

PAINT, PRIMER AND SPRAY CANS

Now that our model is built, we can start to paint it. However, before we can look at some techniques I should probably cover a few key types of paint and paint products on the market. Before this though it's best practice to give your models a wash in warm soapy water to remove any release agents, dust or greasy fingerprints etc. that can build up on the model and potentially harm the finish.

All the following guides in this book will be painted over primed models and for most of these I'll be using a black primer as it provides a deep shadow colour and will speed up the painting of the model.

First of all, primers are probably the most important type of paint you can get, especially when working with resin or metal. These differ from paint in being specially formulated to give a hard-wearing coat that gives a resilient surface for handling and painting. With most paints for wargaming being water-based, this is especially important as repeated handling without a primer can cause paint to wear off a finished model. Primers typically come in black, white, grey and dark red, and I prefer to

get them from places selling car body paints.

When working with purely plastic models you can get away with using coloured spray paints as the initial layer of colour. There are a great, great many of these on the market in both enamel and acrylic form, so finding something to fit your needs shouldn't be too hard. Most notable ranges are The Army Painter, Citadel, Plastic Soldier Company, Tamiya and Humbrol. When working with these sprays I'd still suggest applying a light coating of primer and allowing this to dry thoroughly (for at least twelve hours, although twenty-four hours is better) before applying the colour spray.

By far the vast popular medium of paint used for wargaming is acrylic. This type is water-soluble but quick-drying and hard-wearing. Most paint

when purchased requires some thinning to get the best results as paint that is too thick will not only be difficult to get where you want it to go, it may also swamp the detail on your model. To thin your paint, simply apply a little of it to a pallet – an old tile or plastic lid is great for this – then add an equal amount of water and stir together using an old brush.

For best results add a tiny amount of flow improver; this will hold the coverage of the paint together well while still keeping the paint controllable. It's hard to give any ratio of paint to water as it depends on the paints you have, the brands and even the colours used.

When mixing paint for airbrushing, you will need to mix the paint a little thinner. As a rough guide, you will want an approximately 50/50 mix of paint to thinner, although this varies between both paint ranges and individual paints. If your paint range has its own brand of thinner, I'd also suggest using this to mix with the paint for airbrushing rather than using pure water as it will ensure that the paint flows as intended. With airbrushing, it is always recommended to experiment on some spare plastic to get a better idea of how the paint will perform before committing to the model.

Enamel paints are oil-based, and while prevalent as paints in their own right, these are now largely used for weathering products. They have longer drying times than acrylics, but also allow you to work with them and blend them using mineral spirits.

Finally, oil paints are very useful for weathering. They can be thinned using mineral spirits or white spirit. It's recommended to use them in a well-ventilated area. They have a longer drying time than enamels, and can be reactivated several days after they have been applied to a model. This makes them ideal for subtle weathering effects as we will see later throughout this book.

As you go through the book you will notice that the majority of paints used are Humbrol acrylics. This range may be unfamiliar to those outside of the UK or new to the historical side of gaming. Humbrol is a long-established modelling supply brand with a large array of products. Importantly for the purposes of this book, the Humbrol website features

a very thorough conversion chart so that you can convert the paints used into other brands if you cannot find Humbrol products or would prefer to use other more familiar ranges.

PAINT BRUSHES AND CARE

As with most tools, brushes vary between super cheap where you get a pack of a dozen for a few pounds and fine Kolinsky sable examples that can seem hugely expensive in comparison. As someone who paints a huge number of models, I'd say it's worth splashing out on the best quality brushes you can afford as not only will they last longer, they will work out cheaper in the long term.

To illustrate this, I've had some expensive brushes that are used pretty much every day for long periods, still very functional if a bit worn now. I also have a steady stream of cheaper brushes that seem to last a few months before being relegated to mixing and stirring purposes.

A high-quality brush will also give you better brush control and a finer finish. Personally I predominantly use the Winsor and Newton series 7, Rosemary and Co. and Broken Toad ranges. That said, for things like applying washes and dry brushing, I do find simple, cheap hobby brushes from the craft shop to be perfectly adequate. For less expensive though still serviceable brushes, Pro Arte, Army Painter and Games Workshop all produce useful ranges. Again though, it's worth having some cheap, disposable brushes too for jobs like mixing paint, applying washes, dry brushing and applying glue, anything for which you do not want to use your best brushes.

Paint brushes themselves are typically made from either synthetic weave or natural hair. Synthetic brushes don't tend to hold paint as well as natural brushes; however, when working with acrylic paint this isn't too much of a hindrance as you will be cleaning the brush anyway thanks to the rapid drying times of the paint. However, natural brushes tend to give you better control over the application of paint. Natural brushes are better at retaining their point for precision application and also hold more paint, giving the added benefit of being able to keep working on a subject for longer. Natural fibre bristles are at their best when used for detail work, especially painting areas such as faces or fine layered highlights.

As you work, you will naturally need to clean your brush. When using most acrylic paints a simple pot of water will be sufficient for use between changing colours and to prevent paint drying in the bristles, and regardless of what your brush's bristles are made from I'd not recommend leaving it any longer than a few minutes between giving it a quick swish around in some water. You can add a little washing-up liquid to your water too, although I've not found it necessary myself.

For more long-term care, there is a wide range of brush cleaners and conditioners on the market, and frequently there are products put out from each of the major paint ranges. It's worth investing in either some brush cleaner or better yet some brush soap to prevent excess wear or damage to your brushes' bristles. Odourless brush cleaner can be especially handy for aiding the restoration of brushes. Each of these

products will have its own set of specific instructions, usually printed on the side of the packaging, which typically involves giving the brush a solid swishing around in the cleaner/soap, leaving it to stand for a bit and then rinsing it clean and shaping. I've used a combination of brush soap and high-end sable brushes to keep the same fine brushes in use almost every day for several years now!

With regard to what size and shape brush you should be getting, a size 0, a size 1 and a size 2 round should be sufficient. Though it may seem counter-intuitive, a brush with a good quality point and fairly long bristles will be far more useful and give a much better result than a tiny size 000 for the vast majority of painting work.

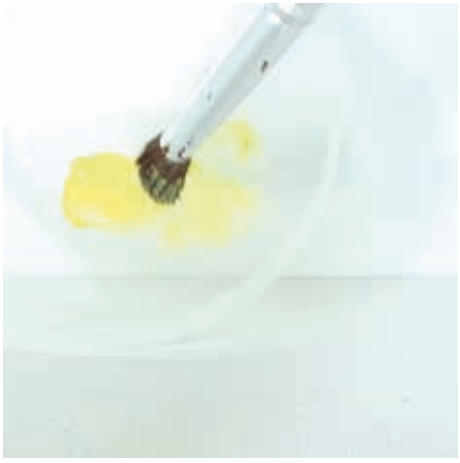
You'll probably spot in the painting guides the use of flat brushes as well as make-up brushes. These are just what they sound like: either flat, chisel-like brushes or round, dense, short-haired ones. These are both great to use for dry brushing as they give a good amount of control and lend themselves well to pulling over the raised detail, allowing you to quickly have fairly precise highlights. They aren't compulsory for dry brushing, but they do make life a lot easier.

PAINTING TECHNIQUES

Over the course of the painting guides I'll be referring to several techniques. Rather than repeating myself in each guide I'll cover a few of the basic methods here, and then they are ready for you to add to your toolbox.

Dry brushing

Dry brushing is, as the name implies, the technique of using a small amount of paint on a dry brush to build up layers of colour by quickly flicking the brush over the surface of the model. This will have the effect of adding a contrasting colour to raised areas while leaving the remaining parts of the model in a darker tone.



T
18

While simple in concept, it can take a little practice to really become proficient with dry brushing. Somewhat counter-intuitively, while dry brushing implies a completely dry brush, this can lead to streaking or powdery paint so having a slightly damp brush before loading it with paint can give a much smoother effect. However, it can be difficult to gauge just how much to moisten the brush so the best thing to do is to practise and find a level that works for you.

Once your paints are applied to the pallet, avoid thinning them and just load up the tip of the brush with a small amount of paint. Clean this from the brush with some tissues and then test to see how much paint is present by lightly dragging the bristles over some card. You want the paint to be landing on the tops of creases, folds and details of the model, but also want to avoid streaking or blobbing of paint. With dry brushing it's best to allow several layers of paint to build up to achieve the effect you are aiming for as opposed to going in with one initial, heavy dry brush as this can overwhelm your model.

One tool I've found to be very useful for dry brushing is a make-up blusher brush as they have soft bristles and allow paint to build up into very nice degrees of colour.

Washing and glazing

A wash is a heavily thinned paint applied to a model so that it flows and settles into the details. These can be purchased in ready mixed forms or you can make your own. For the latter, simply add two to three parts of water with a little washing-up liquid or flow improver to one part paint and then mix these together. Paint this mix over the model, allowing it to accumulate in recesses and details but equally trying not to allow the wash to pool. This can be caused by too much wash being applied and flooding the model.

A wash is best applied with an older though still well-shaped brush with soft bristles. If you apply too much wash, you can remove it by using a clean brush to soak up the excess paint before it dries.

A glaze or filter is a similar layer to a wash, and is used to unify the highlights and shades already applied. The process is largely the same as

for applying a wash; however, it is applied far more sparingly. To apply a glaze simply use a less heavily loaded brush than you would with a wash and paint this over the model, allowing the colour of the glaze to form on the model but without flowing into the recesses as heavily as with a wash.

Varnish

A varnish is a clear protective layer applied to the model to protect the paint finish during handling. Varnishes are essentially gloss, matt or satin in finish. Gloss is very shiny, matt is without lustre and satin is somewhere in between, and it largely depends on the manufacturer just whereabouts it falls between the two. Whether you use just one type of varnish, both types or none at all is entirely up to you.

Varnishes can be obtained in many forms, but most useful for our purposes are those in spray cans, which allow you to varnish many models quickly and evenly and also have the added bonus of generally being touch-dry reasonably

quickly. Avoid spraying on hot or humid days, however, as this can cause the paint to cloud and potentially ruin your paint job!

Hopefully these tips and techniques will have you feeling confident about getting on with assembling and painting your models, and as ever should be treated as a stepping-off point for your own experiments. Now on to actually building your models!

PAINTING GUIDES

Now that the basics of tools and preparation are covered, we can start to look at actually painting your models. For most of these guides I will mention the primer colour used. However, these are not set in stone so if you have a primer you prefer using or want to experiment with using coloured spray primers, then I encourage you to experiment as much as you can.

With such an extensive range of equipment in use during the war and the varieties of paint schemes and qualities of paint that were present, it would be impossible to cover every variation. However, each of the following guides will give you a good baseline for painting standard equipment for each nation covered in this book. While the title of this book is painting armoured vehicles, each guide applies to soft skins, artillery, logistical support and any other carriers that were used by one of the powers involved in the Second World War.

With so many scale models available that can work well with gaming, it seems useful to add a quick conversion table. Figure sizes aren't set in stone, however, and one manufacturer's 28mm might be quite different to another's, and even more so when taking into account the heft and build of individual figures, so their relation to ratio scales is always a little problematic. This is, therefore, a more or less guide rather than a precise one. Some sizes have a bit of a range in scales associated with them. It's fine to mix them, but better to remain consistent. For example, using all 1/56 or all 1/48 vehicles with your 28mm figures will look far better than a combination of the two. Also the lower the number in the ratio, the

larger the model; e.g. 1/285 means the subject is 285 times smaller than the real thing while 1/56 means it is only 56 times smaller.

SCALE

Figure size	Ratio scale	Model railway scale
6mm	1/300-1/285	ZZ Gauge
10mm	1/160-1/144	N Gauge
15mm	1/100	TT Gauge or HO Gauge
20mm	1/76-1/72	OO Gauge
28mm	1/56-1/48	O Gauge
54mm	1/35-1/32	Gauge 1

2

British Vehicles: Camouflage and Markings

Having pioneered the use of tanks during the First World War, the British army continued to advance the theories of mechanized warfare during the interwar years. Sir Basil Liddell Hart and Major Generals Fuller and Hobart especially pushed against the more conservative thinking of the army during the 1920s and 30s to develop the practice of combined arms operations, combining armour, air, artillery and infantry power together, all coordinated by significant use of radios.

At the outbreak of war the British army was very well equipped in terms of trucks and numbers of vehicles; however, the quality was variable. Although by no means unique in the period, many vehicles were aging and obsolescent designs, although others such as the Matilda tank were really quite exceptional for the time. Mechanical issues and breakdowns were something of a curse on many of these early vehicles, which would only be exacerbated in the heat and dust of the North African campaign.

With war clouds gathering, in 1939 the War Office issued directives for vehicles to be repainted from Bronze Green to camouflage, which consisted of a base paint of Khaki Green No. 3 with Dark Green No. 4 applied to between a third and half of the vehicle's surface. The dark green disruptive paint was applied by the crews so that no two vehicles would look alike. Some period photos from the Phoney War and the Battle of France actually show chalk marks on some vehicles where the patterns were sketched onto the tank before being applied.

Regarding insignia, the British army had not adopted any sort of national insignia at the outbreak of war. As an interim form of recognition mark, it was ordered that vehicles should have a white square painted on each facing of the vehicle's hull, although this was not universally adopted and appears to have also been painted with the yellowy-green anti-gas paint on some vehicles.

Despite this, a myriad of tactical and formation markings were carried. Typically on the front and rear of a vehicle one would see a regimental or divisional badge, a bridging weight marker comprising a yellow disc with weight grade, and also a tactical formation marker consisting of an appropriately coloured square with a number painted inside.

Squadron markings were painted on the turret comprising a series of colour-coded geometric shapes. For brigaded units, these shapes would be painted in red for the senior regiment, yellow for the second regiment and blue for the junior regiment. The Battalion HQ vehicles featured a diamond shape, A Company a triangle, B Company a square and C company a circle. These were all painted as hollow shapes.

Occasionally one sees vehicles that still have their civilian number plates in the British Expeditionary Force. These were black plates with the numbers picked out in white.

It was tradition within the Royal Armoured Corps to name their tanks (and some other vehicles such as universal carriers and armoured cars). These names would usually all begin with a letter corresponding to the company letter or number, although this was not universal.

Following the fall of France and the restructuring of the British army with new equipment from 1941 through to 1943, the base colour of British vehicles changed significantly with Standard Camouflage Colour (S.C.C.) 2 being adopted. This is a distinctly brown tone with a slightly greyish khaki shift to it.

This was due to a shortage of pigment required to create green paints, and would mostly be seen on vehicles operating in the Dieppe landings and vehicles sent via Lend-Lease to Russia, as well as on some vehicles in North Africa. Due to space considerations I have not produced a guide for this colour palette within this book; however, you could use Humbrol 29 as a base tone and then use any of the techniques covered in the book to apply it to your models.

While one might think that the colour of British vehicles in North Africa and the Middle East would be a pretty straightforward and simple subject, this was not really the case, with numerous patterns trialled between the late 1930s and 1940. In 1940, however, things stabilized a little. Most vehicles between 1940 and late 1941 were painted with a distinctive, dazzle type of camouflage known as the Caunter Scheme, specifically used for vehicles in the desert theatre.

This featured the lower areas of the vehicle painted in Portland Stone, a light sand colour, the middle areas painted with a jagged pale greenish colour named Silver Grey, and the upper surfaces Slate Grey, a dark, greenish-grey colour. Individual vehicle types each had their own specific camouflage patterns assigned to them. The Caunter Scheme seems to have lasted on vehicles until late 1941 when orders came for a new disruptive scheme.

From December 1941 Portland stone was specified as the overall colour for vehicles, with individual units authorized to add camouflage as they deemed fit using green, brown and black paints. Although Desert Pink (still a pale sand colour) officially came into use as the standard colour for vehicles from late 1942, this did not entirely replace Portland Stone.

From April 1943, vehicles operating around the Mediterranean theatre were ordered to be painted in a new tone: Standard Camouflage Colour 5 Light Mud. This was a sandy colour with a distinctly khaki-grey tone to it, and was finished off with a disruptive pattern of large areas of black paint.

From 1944 the universal colours used in Northern Europe were applied to those vehicles operating in the Mediterranean. All American vehicles supplied via Lend-Lease would be modified to suit British requirements before being issued to their respective units and this included respraying in the relevant standard camouflage pattern of the period and theatre.

BEF ARMOUR

Here we will be painting two Matilda II tanks using the standard camouflage pattern used by the British army in the standard camouflage pattern used on the majority of British equipment in temperate zones.

First we will have an airbrushed model followed by a brush-painted model. Details such as tracks, weathering and transfers will be covered in subsequent chapters.

The Matilda tanks used are from 20mm/1/72 scale kits from Tabletop World; however, the colours will work for any scale model.

Airbrush Method

While I am using Humbrol acrylic paints to paint these models, you can use any paints you prefer. I am using them as they are readily available in the UK and they thin and spray well. Alternatively, using lacquer or alcohol-

based acrylics gives a very hardwearing finish. I have not mentioned paint to thinner ratios as this varies so much depending on your particular set-up of airbrush and air supply.

Step 1: Prime black

First of all we will prime the model with black. This will serve as a base to add depth and variety to the subsequent layers. I have used a rattle can of primer to save time, although you could airbrush this instead if you wished.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Khaki Green No. 3

We will now apply a layer of a light olive tone for the initial camouflage colour. There are two ways to apply this. If you want to get the colours down quicker, you can spray on green as a smooth, even coat. However,

if you want a little more depth and variety to the colour, as you are airbrushing spray the paint so that the colour builds up into a deeper tone in the centre of armour plates and panels.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 159 Khaki Drab

Step 3: Khaki Green highlight (optional step)

This is an entirely optional step; however, it can add some very nice additional texture and detail to the model. This is very much an aesthetic choice depending on personal preference.

To lighten the previously applied tone, we will mix a buff paint with the green paint. You could use white; however, this can make the paint appear a little bit too chalky and desaturated. Here I've mixed equal parts of the buff and green tones together before spraying them into areas that would naturally catch the light and this enhances the model's detail.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	50% Humbrol 159 Khaki Drab and 50% Humbrol 74 Linen

Step 4: Masking camouflage

The camouflage patterns used by the British army had a hard edge to them which would be impossible to replicate without masking so we will use a putty to create the outlines of the patterns.

While you could use products such as Plasticine or Blue Tack, far superior for this task is purpose-designed modelling putty. These products are reusable and do not harm underlying layers of paint.

We will roll the putty into strips and press them evenly onto the model to form the edges of the areas where you will want to apply the dark green disruptive pattern. If you are concerned about additional overspray, you can also use the putty to protect the khaki green areas.

Brush used	Paint used
N/A	AK Camouflage Plastic Putty

Step 5: Dark Green No. 4 camouflage

With the model masked, we will now apply the dark green of the disruptive pattern. It is important to ensure that you apply the paint evenly here, as if you apply it too thickly and heavily it will form a skin that creates a ridge against the masking putty so it may be worth practising on some spare plastic or card before committing to the model itself.

Leave the masks in place if you are going to add a highlight to this colour. Alternatively, if you skipped step 3, you may remove the putty and go on to the finishing steps of the model.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 241 Schwartzgrun

Step 6: Dark Green Camouflage No. 4 optional highlight

This is another optional step; however, if you have applied the highlights in step 3 it is worth applying the highlight to the dark green to maintain continuity of tones. As before, we will mix a buff tone into the dark green with a roughly 50/50 mix. However, you may need a bit less of the buff to ensure a deeper, richer tone to the dark green.

Spray the highlight sparingly into the raised areas and centre of any details to enhance those features of the model. Once the highlight is applied, remove the masking putty.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	50% Humbrol 241 Schwartzgrun and 50% Humbrol 74 Linen

Step 7: Finishing off

This is another optional step; however, as airbrush paint is applied in such thin layers it is worth applying a coat of varnish to protect the model, especially when using acrylic paints. This also unifies the surface finish so that it is easier to apply transfers and weathering effects later on with the model, as well as simply protecting the model during handling.

This model received a coat of varnish before receiving the full range of weathering treatments detailed later in the book.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Winsor and Newton Galeria Matt Varnish

Brush Method

This method will give a very similar appearance to the airbrush process with more of an emphasis on highlighting the edges of the model. If you do not feel comfortable applying the airbrushed highlights to the model you can use the dry brushing steps featured here. Likewise, if you do not have access to an airbrush or wish to use masking putty, you can apply the dark green pattern using a conventional brush instead.

Step 1: Black primer

To aid coverage of paint over the model, we will be painting over a black base coat. Grey could also work; however, black is a more forgiving base

to work from as it will fill all the deepest recesses of the model. While you could use a paintbrush to apply this I would not recommend it and suggest using a can of spray primer instead.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Khaki Green No. 3

It might seem more logical to start with the darker green of the camouflage pattern as we're working from a black base. However, applying the lighter tone first will be a quicker process as we can use a large brush and apply multiple thin layers to build up a pleasing degree of opacity to the tone.

Use a large, flat brush and keep the paint thinned and flowing well to paint the model; you may need several coats and it's important to let each preceding layer dry. This shouldn't take too long though, and is very suitable when batch-painting models as your first model will be dry by the time you finish applying a layer to the last model of the batch.

Brush used	Paint used
Size 2 flat shade brush	Humbrol 159 Khaki Drab

Step 3: Khaki Green No. 3 highlight (optional)

Once you have built up the khaki green to a nice smooth coverage, you may wish to enhance some of the details on the model. There are a few ways in which we can do this, and these will be shown in other guides

throughout the book so feel free to experiment with some of those techniques demonstrated in the chapters detailing other nation's guides. Here, though, we will use the dry brush technique to pick out some details.

This time we do not want to have too stark a contrast between the base tone and the highlight so will mix one part of the buff colour to two parts of the khaki green to give us a different though subtle change in colour. We will then use a large flat brush to dry brush across the model's surface and emphasize the details.

Brush used	Paint used
Size 2 flat shade brush	70% Humbrol 159 Khaki Drab and 30% Humbrol 74 Linen

Step 4: Dark Green No. 4 camouflage pattern

As we are brush-painting the camouflage we will not need to mask any of the pattern onto this model. When applying free-hand camouflage such as this you can use a water colour pencil to sketch out where you want the camouflage to appear. However, in the interests of saving time I will simply be applying the camouflage directly to the model.

While it is important to thin the paint, as you are applying a darker tone over a lighter one you don't want it too thin as capillary action could cause the paint to run, especially when passing around details. If this does happen you should be able to use a clean, damp brush to remove excess paint.

Using a brush with a good shape, apply the dark green to roughly half the model's surface in broad, sweeping patterns.

Brush used	Paint used
Size 3 round	Humbrol 241 Schwartzgrun

Step 5: Dark Green No. 4 highlight (optional)

This step takes a bit more refinement; however, it will really make the model look good.

We will mix one part of buff-coloured paint with two parts of dark green colour and, using a small round brush, dry brush a lightened version of the dark green onto the model, being careful to apply this just to the areas of dark green camouflage.

It's probably worth testing the paint and technique on some spare plastic or parts first to ensure that the paint is not going to be chalky or too contrasting with the base paint.

Brush used	Paint used
Size 2 stippling brush	70% Humbrol 241 Schwartzgrun and 30% Humbrol 74 Linen

Step 6: Final highlight dry brush (optional)

This is another optional step, one that can be used to pick out the edges of the model. We will use a lightened version of the base khaki green and, using a large flat brush, carefully dry brush along the edges of the model focusing on the corners of the turret and hull.

We will use a mix of equal parts of our buff tone and base tone of the camouflage. This will provide a contrast colour to both parts of the camouflage while not being too much of a contrast.

Brush used	Paint used
Size 2 flat shade brush	50% Humbrol 159 Khaki Drab and 50% Humbrol 74 Linen

Step 7: Finishing off

Applying a varnish coat is entirely optional; however, it will protect the paint during weathering, and if you are using oils it's very much recommended to do this as the thinners are quite aggressive and can potentially harm the paint.

This model has been finished off with transfers, chipping, pin washing and some dust washes.

Brush used	Paint used
Size 2 flat shade brush	Winsor and Newton Galeria Matt Varnish

Desert Camouflage

This guide will cover painting some of the more standardized patterns used by British and Commonwealth Forces in the North African campaign. As stated in the opening of this chapter, there were numerous patterns used in this theatre of operations. We will cover the famous Caunter pattern here as this allows us to cover the sand tones applied to the majority of vehicles in North Africa as well.

For some of the patterns using black or dark green swathes of patterning, simply use the processes covered in the BEF camouflage, swapping khaki for pale stone and dark green for black or olive drab depending on your chosen subject.

Airbrush Caunter

Step 1: Black primer

Despite this being such a lightly coloured camouflage scheme, we will be using a black base as this will add some shading to the model as the

painting progresses. For a quicker result you could alternatively use a grey primer, although the finish may appear a little flat by comparison.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Light Stone

I will start by applying a few light coats of sand paint. Light Stone and Portland Stone were quite a light, sandy colour with Light Stone having more of a yellow tone.

We will apply a few light coats of the sand colour over the model and then allow it to dry for a few minutes before spraying sand paint into the centre of the armour plates, leaving the edges slightly darker. This tonal variety is optional, and you could instead keep spraying the sand paint on until you have an even smooth coverage if that is your preference.

If you are doing a vehicle simply painted in sand, you can now go on and apply some varnish, decals, weathering and detail painting.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 121 Pale Stone

Step 3: Masking

The Caunter Pattern used a set of specific, hard-edged designs on each particular type of vehicle, although it is largely limited to earlier-war British-designed types. Plans can generally be found online by searching for the type of vehicle you have along with 'the Caunter Pattern'.

Due to the complexity of the pattern, we will now mask off all the areas that are due to retain the sand colour before applying the light green part of the camouflage in the next stage of painting. It is important to leave the model to dry thoroughly before applying masking tape. With acrylic paints, it is best practice to leave the model to dry overnight before applying masking tape.

We will use two types of specialized masking tape here. Japanese kabuki tape can be found online for very reasonable prices, but can also be bought from model shops under the Tamiya brand. I am also using some flexible masking tape, which is a rubbery tape that is very thin, allowing it to easily conform to complex shapes. On this model I have used the blue flexible tape to mask out the edges of the pattern before using the yellow kabuki tape to protect the rest of the sand areas of the model.

It is worth ensuring a solid seal of the masking tape so you will probably want to secure it to the surface of the model using a cocktail stick or the back of a paint brush.

Step 4: Silver Grey

Despite the name, Silver Grey is actually a light greenish-blue colour. Try to avoid using pale blues here as this is not correct, and although often presented as such in art and some preserved vehicles, this is the result of inaccurate interpretations of the colours used.

Apply a light coat of your Silver Grey tone and then allow it to become touch dry. This is an important preparatory step to prevent paint bleeding under the masking tape as it will form a sealing skin of paint.

Once this sealing layer is touch dry you can then fill in the colour, applying light layers of paint until a solid tone is achieved. Allow the model to dry thoroughly before proceeding to the next step.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 90 Beige Green

Step 5: Masking (again)

As in Step 3, once the model has dried we will mask off the previously sprayed areas. This is exactly the same process, taking care to look at the relevant plans for the particular vehicle.

Step 6: Slate Grey

Again, when airbrushing on this next stage of camouflage, we will be misting on an initial layer of paint to form a seal between model and mask before spraying on our Slate Grey to create a deeper, opaque finish.

It is worth noting that Slate Grey was a dark, slightly bluish-green grey. As with the Silver Grey, this colour has also suffered a little from misinterpretation in the past and is often incorrectly represented as a mid to dark blue when a grey is more correct.

Once you are happy with your finish, you can finally unmask your model. Any peeling or bleeding of paint can be tidied up either by re-masking and spraying that area or going in with a paint brush, whichever you prefer.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 224 Dark Slate Grey

Step 7: Finishing off

To protect the model during the weathering and finishing steps as well as unify its finish, we will give the tank a coat of matt varnish. Once the

varnish had dried, the model has been finished off by having transfers added, some light chipping and finally a layer of pigment weathering.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Winsor and Newton Galeria Matt Varnish

Brush-Painted Caunter Pattern

Step 1: Black primer

I always prefer using a black primer as I like the depth of colour you get and the ready shading in the deepest recesses of the model. However, as this is a very pale colour, it does require more coats of paint so you may prefer to use a grey primer. As such, a grey primer or even a sand-tone spray paint are all quick options should you wish to use them and are covered later in this book. For completeness I have worked from a black base with this model.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Light Stone

Using a large flat brush, we will apply our sand-tone paint onto the model. Thin the paint down to ensure that it flows well. You will probably require two to three layers to get a solid coverage, and you will need to

be careful to prevent the paint pooling or running. If this does happen you can use a paint brush to lift off any excess paint.

Brush used	Paint used
Size 2 flat shade brush	Humbrol 121 Pale Stone

Step 3: Masking

If you have a good degree of brush control, you could choose to forgo masking the camouflage pattern; however, this could potentially lead to a never-ending process of correcting yourself. As detailed above, leave the model to dry thoroughly before applying the masking tape as detailed in the airbrush method.

Step 4: Silver Grey

Brush-applied paint can still bleed under the tape, especially if it is quite heavily thinned. To offset this, try to be as neat as you can and use a brush that will give you a decent amount of control.

Try to treat the model as if you have not masked it and paint carefully up to the edge of the masking tape. You will probably require two layers of paint here and, as ever, keep the paint thin and therefore easy to control how it flows.

Brush used	Paint used
Size 2 round brush	Humbrol 90 Beige Green

Step 5: Masking

Allow the model to dry thoroughly before applying the next stage of masking. Some vehicle types had the Slate Grey applied only to the upper surfaces of the model so you may be able to safely paint these without masking. As ever, consult your references and see how confident you feel.

Step 6: Slate Grey

Using the same techniques as with the Silver Grey, we will carefully apply this darker tone to the model. Once the paint has dried, you can remove all the masks and tidy up any bleeds or places where the tape has damaged the paint below.

Brush used	Paint used
Size 2 round brush	Humbrol 224 Dark Slate Grey

Step 7: Dusty dry brush

To help bring all the colours of the camouflage pattern together, you can give the model a dry brush of a pale, sandy greyish-brown colour. Using a large flat brush, concentrate the dry brush effect to the edges of the armour plates and to pick out the most significant details.

Brush used	Paint used
Size 2 flat shade brush	Humbrol 71 Oak

Step 8: Matt varnish

Finally we can give the vehicle a layer of matt varnish to seal it and prepare it for weathering and finishing. Apply the varnish with a broad flat brush to prevent streaking or brush strokes appearing in the model, and be prepared to lift any varnish that streaks or runs.

Once the varnish has dried, you can go on to use whichever weathering techniques you prefer to complete the model. For this model I have added transfers, chipping and a heavy layer of pigment dust as detailed later in the book.

Brush used	Paint used
Size 2 flat shade brush	Winsor and Newton Galeria Matt Varnish

This Churchill tank is painted in the dark olive tone used by vehicles operating in Europe and Tunisia. To replicate it, paint it an earthy, greenish-brown colour. This vehicle has also received additional heavy weathering.

This Humber armoured car represents those vehicles painted in the simple desert sand camouflage.

The Stuart tank here is painted in a variant of the Caunter scheme with more bluish tones. Not strictly accurate, but a nice visual contrast to the weathering.

3

French Vehicles: Camouflage and Markings

By 1940 the French army was probably the best-equipped in terms of armoured forces. Their vehicles were well-armed and armoured, although generally let down by poor command, control and logistical systems. This being said, their crews performed aggressively and bravely despite poor levels of training.

While numerous and comparatively advanced, French armoured doctrine was hamstrung by outdated thinking. Most French generals in 1940 were in their 70s and 80s and, perhaps understandably, shaped their doctrine around the trench warfare of the First World War.

Broadly speaking, armour was spread out piecemeal across formations instead of being concentrated in hard-hitting spearheads, and further split with slower moving, heavier vehicles supporting the infantry and faster, lighter vehicles that would take over the role of mounted cavalry.

French armour tended to be wasted in limited actions and many vehicles ended up being abandoned due to a lack of fuel and supplies. Near total German air superiority was to prove the final nail in the coffin for what remained of the French armoured forces.

After the armistice, Vichy French forces retained what armoured vehicles they had left, with significant numbers of older vehicles being present especially in their North African territories, particularly armoured cars, although some tanks were also present, mostly comprising Renault and Hotchkiss vehicles with a few of the venerable and ubiquitous FT series tanks thrown in.

These Vichy vehicles would fight against the Allies in several operations, most notably during the Operation Torch landings. By contrast, Free French forces did not retain any of these older, obsolete machines and were entirely equipped with modern American-made vehicles.

The camouflage and insignia of French and Vichy French vehicles between 1939 and 1943 are both simple and mind-bogglingly complex. Essentially vehicles were painted an olive green tone with appropriate camouflage then applied, with national and squadron markings added as appropriate.

However, this tended to be implemented very much on an ad hoc, unit-by-unit level. This was compounded by the fact that camouflage would also be factory-applied, each using their own stocks of paint and camouflage templates and patterns. That said, there were still some commonalities that can be identified.

Before looking into the specifics of camouflage patterns, we will take a moment to discuss the tones used. As mentioned, there wasn't a huge amount of standardization in paint as pigment quality was poor, as was the supply of

paint. In theory all equipment was meant to have a disruptive scheme; however, in practice it was only really the tanks that had camouflage paint.

Ostensibly four main colours were used for camouflaging French vehicles, and although no original documents describing paint mixes or official tones still survive, broadly they were as follows:

Vert Olive Mat: This was an olive green, of which at least two broad versions existed: one a fairly dark tone and another lighter, later version. The darker version was most often seen on pre-war vehicles and can usually be seen on artillery and logistical support equipment without any further camouflage paint.

Brun: A mid-brown colour which could vary from earthy to very reddish terracotta tones.

Ocre Jaune: This sandy tone covered a fairly broad range of shades from yellowish ochres to pale sands.

Vert: This was a much lighter green than the *Vert Olive*. It too varied somewhat in colour, with some variations being a light, yellowish shade and others having a greyer tint to them.

Camouflage seems to have followed specific patterns or at least the rules of patterns across types of vehicles. While it is beyond the scope of this book to cover them all, it's probably worth taking a moment to describe the more common vehicle markings.

Hotchkiss H-35 and 39: These vehicles were unusual in that they served with both infantry and cavalry formations. Those assigned to infantry groups appear to have been left in olive green with only simple markings and no camouflage patterning.

Echoing the flamboyant uniforms of their forebears, however, the vehicles assigned to cavalry units featured full disruptive patterns of two or three tones and with further black edging of the camouflage colours. In addition to this, roundels, formation markings and vehicle numbers painted in large white numerals are also a common sight.

Renault FT-17: These relics of the First World War utilized a two-tone camouflage of olive with either ochre or brown patches, and retained the insignia and formation markings of the First World War.

Renault R-35: This was another vehicle that was generally painted in three-tone camouflage which would take the form of irregular blobs, either sprayed on with a soft edge or these areas could be outlined with black paint. The R-35 tends to be quite light on any markings beyond registration marks.

Char B: The Char B seems to have had the greatest variety of camouflage patterns applied to it, although vehicles in plain olive also regularly appear in photos. Many of them have a two-tone camouflage pattern that appears to be olive with ochre patterning either sprayed with a soft edge in broad swathes of colour or smaller, tighter areas of colour, further outlined in black.

Unusually, a significant number of the production run of Char Bs were named at the factory with their names being painted on the front and sides of the hull. The national tricolour was painted below the tank's name on the front of the hull and oddly, only on the right side of the turret. Additional markings could be quite varied. Large letters and numbers painted on the hulls and turrets are a fairly regular sight and pretty much exclusive to the Char B.

S-35: These appear to have a fairly standard camouflage pattern of large, horizontal swathes of two, three or even all four of the camouflage paints used by the French along with squadron and formation markings. The camouflage paint could be either sprayed or brush-painted onto the tank.

Armoured cars, Renault UE and soft skins: These were rarely camouflaged, being simply painted in *Vert Olive Mat*. They generally retained simple markings, usually just a serial number if that, although armoured cars can be seen with roundels as well.

Many photos of French vehicles show playing card symbols painted onto their turrets. This may at first glance be interpreted as a morale-boosting piece of art. This was not the case, however, and these markings

were part of a fairly complex series to determine where the vehicle fitted within its formation. The symbols comprised the spade, heart, diamond and club, and were painted blue, white or red. The value of the card's denomination denoted the vehicle's platoon, while the colour in relation to the tricolour denoted the platoon number. Thus a red heart marking would represent a vehicle of the second platoon, third company. Company commanders would use a grid of all four platoon symbols painted in their respective company colour. The use of these symbols was not universal, however, and appears to largely have been left to the unit commander's discretion.

With French camouflage patterns being so hugely varied, it would be impossible to detail every type and application. That said, many of the patterns are replicable using the techniques detailed across the various national guides in this book simply by substituting the paints used in those guides for the paints used here on the French subjects.

Red, white and blue roundels were commonly applied to vehicles from cavalry formations as they would be operating ahead of the main forces and so needed extra identification; however, the heavier vehicles operating alongside the infantry such as the Char B do not usually feature these markings.

Vichy French vehicles operating in North Africa continued to use these methods of painting and did not use a specific desert camouflage scheme. Free French forces were re-equipped along the lines of American armoured formations; however, they did make some extremely limited use of captured German armour late in the war. These vehicles operating under the Allies would be painted in the same fashion as their supplier's vehicles, albeit with French names and insignia.

I have chosen the most intimidating and complex patterns that are still relatively common across the array of vehicles utilized by the French army between 1938 and 1940. The patterns here feature most of the colours used by the French, but variants with fewer tones were also common so you can simplify the patterns if you would prefer.

Models used in the guides are both 1/72 scale plastic kits from the First to Fight range.

Airbrush Camouflage

This scheme will feature a great deal of masking, so for speed brush-painting may actually be preferable here. That said, airbrushing will give you a very smooth, crisp finish. I'm using acrylic paints as these are the most readily available; however, lacquer paints can also work well provided you have the correct thinners and ventilation.

Step 1: Black primer

To begin with we will use a black primer on the model. When airbrushing, this will allow us to effectively shade the model at the same time as preparing its surface for paint. There are many airbrush primers that you could use to give a smooth coat; however, I like to use a rattle can primer as this saves the clean-up process and the paint dries very quickly. Ultimately it comes down to personal preference.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Spray *Vert Olive*

The olive green used by the French army is quite a dark shade with a touch of brown to it. I'm using US Dark Green, but most dark olive tones will work here. We will spray the olive green over the entire model and will be careful to ensure that some of the black remains visible in the

darkest recesses such as in the deepest areas of the suspension, the edges of armour plates and over hanging areas.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 116 US Dark Green

Step 3: Masking

If your vehicle has a hard edge to the camouflage pattern, it will require masking. With such a complex scheme on such a small model, the only real product to use is masking putty. You could use masking fluids; however, there is a good chance of damaging the paint as you will have to keep removing and reapplying the fluid. Alternatively you could cut masking templates from masking tape; however, this would take forever for essentially the same effect.

We will make small sausages of putty and use them to create blobs that we will be painting during the next stage of painting.

Brush used	Paint used
N/A	AK Camouflage Masking Putty

Step 4: Spray *Terre d'Ombre*

As with the ochre colour from Step 4, you will need to apply the dark brown in a tight, neat spray pattern. Again, practise spraying on some spare card until you are happy that you can control the way the paint is spraying.

You will want to be using a brown with quite a reddish tone as this is most representative of the dark brown used by the French on their vehicles in 1940.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 160 German Camouflage Red

Step 5: Masking

We will peel off the masks applied in the previous stage before repeating the masking process in readiness for applying the sand colour of the camouflage. Consult your references to determine how the pattern is applied to the particular vehicle type you are modelling.

Brush used	Paint used
N/A	AK Camouflage Masking Putty

Step 6: Spray *Jaune d'Ocre*

Now we will begin spraying the camouflage patterns onto the model. This will require an ochre/sand-type colour. There is a bit of leeway in what tone you use here from fairly orange to light buff being used due to a lack of consistency within the availability of paints at the unit level in 1940.

It is important to ensure that you are able to spray a controlled, sharp line of paint here so practise on some spare card until you are confident that you have a controllable combination of paint, thinner and air pressure. Apply the paint into the areas you masked in the previous stage.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 225 Middle Stone

Step 7: Masking

For the final stage of masking we will repeat the process in Step 5 of removing the current masks and applying a new set. Again, pay close attention to your references; however, the light blue-grey areas tend to be limited to the uppermost parts of the vehicle.

Brush used	Paint used
N/A	AK Camouflage Masking Putty

Step 8: Spray *Gris Bleu Clair*

For the final part of the camouflage areas we will be using a light bluish-grey. As this is such a pale colour you may need to apply multiple layers to ensure good coverage. It is important not to rush this or be tempted to apply a heavy layer of paint as this could damage the underlying camouflage patterns and could also potentially cause ridges of paint

which would be very difficult to remove. Once the paint is dry, you can remove the masks.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 247 Lichtblau

Step 9: Black lining

To complete the model's camouflage we will apply a black outline to the previously sprayed camouflage areas. On most vehicles this was a hard-edged dividing line; however, very occasionally some vehicles have this line sprayed on, which you can do with the airbrush. Here we will be creating a more representative scheme so will use a brush with a fine point and good well to it. The paint will need some thinning as this will allow you to carefully follow the contours of the disruptive scheme. Take your time and be prepared to apply two coats; however, with the opacity of black paint being so dense, you should be fine with just one coat.

Brush used	Paint used
Size 1 round	Humbrol 33 Black

Step 10: Varnish and finishing

It's worth giving the model a coat of varnish at this point as so many layers of paint can have different levels of shine to them, so this will unify the surface of the model in readiness for adding transfers and weathering.

This model has been finished off by having transfers applied and then chipping before being given an oil paint wash into the details and some dark earth enamel wash over the running gear.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Winsor and Newton Galeria Matt Varnish

Brush Camouflage

Unusually when it comes to painting vehicles with camouflage patterns, French vehicles can actually prove to be quicker and easier to paint with a brush rather than an airbrush. A brush will give you a good degree of control over the application of paint and also save you the effort of masking the model too.

Step 1: Black primer

The green we are using to paint this model is a fairly dark tone so a black primer will complement it nicely. A good rattle can primer will give a nice

smooth base to work from. Alternatively you could use a suitable green spray paint if you wanted an even quicker finish.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: *Vert Olive*

Using a broad, flat brush we will apply thinned layers of olive green paint until the finish is a solid, smooth layer. For this first layer we use a larger flat brush as it both covers quickly and also reduces the risk of brush marks.

Keep the paint thinned so that it flows well, and allow the paint to become touch dry before adding further layers. Using acrylics, though, this shouldn't take long.

Brush used	Paint used
Size 2 flat shader	Humbrol 116 US Dark Green

Step 3: *Jaune d'Ocre*

For the ochre part of the camouflage we will use a size 2 brush with a good point, although any brush with a good point that holds a decent amount of paint will suffice. You will want to thin the paint so that it flows well and then sketch out the shape of the ochre blobs in the pattern.

Allow this initial layer to dry before applying another coat or two until a smooth, even tone is achieved.

Brush used	Paint used
Size 2 round	Humbrol 225 Middle Stone

Step 4: *Terre d'Ombre*

As with the ochre colour, we will brush on the brown. Again, a size 2 or similar size brush will allow us good control of the application of paint, and we will use the first layer to sketch in the shapes of the pattern before allowing it to dry and applying a second layer to improve opacity. Brown paint tends to have a very strong pigment so you may actually only need to apply one layer, although two thinner coats generally result in a better finish.

Brush used	Paint used
Size 2 round	Humbrol 173 Track Colour

Step 5: Black lining

If your camouflage pattern requires a black outline, this is a comparatively simple task of painting around the edge of all of the ochre, brown and any other tones that may comprise the camouflage scheme.

A smaller brush such as a size 1 is ideal for this task as it holds enough paint to allow you to paint consistent lining. A super fine brush may seem a good choice for this task; however, these brushes will require you to keep reloading the brush with paint and can result in the lining looking a bit choppy.

Brush used	Paint used
Size 1 round	Humbrol 33 Black

Step 6: Varnish and finishing

If you are planning on using oil or enamel products during the weathering stage, it is worth giving the model a coat of varnish. Once this is dry, we can pick out the rest of the details of the model as detailed in the

relevant chapter of this book, add any relevant transfers and weather the model before sealing it with a coat of varnish to protect it.

As with the airbrush model, this one received transfers, chipping, an oil wash and finally a dark earth enamel wash over the running gear.

Brush used	Paint used
Size 2 flat shader	Winsor and Newton Galeria Matt Varnish

This Char B vehicle is painted in a two-tone camouflage of a type often seen on the Char B. To replicate this, simply paint the vehicle with your preferred shade of green before adding an overspray of reddish-brown.

This Renault UE is painted in the standard scheme of olive green with no additional camouflage.

4

Polish Vehicles: Camouflage and Markings

The Polish army of 1939 was, like so many others, caught in the process of modernization when war broke out. They had an eclectic mix of relatively modern tanks and a huge number of obsolescent tankettes. These latter vehicles were very small two-man machines around the size of a car armed with either a machine gun or 20mm cannon.

Despite being attacked by the huge combined forces of Nazi Germany and the Soviet Union, the Poles fought ferociously and took a heavy toll on their attackers before being forced to surrender.

Polish vehicles during the campaign of 1939 had a very simple paint scheme. Olive green was used universally across all equipment. This was a dark green with a slightly brown tint to it. Additionally a pale, slightly greyish sand tone and a very dark brown were applied as a disruptive pattern. This usually takes the form of long, horizontal swathes. When looking at period black and white photos the lightest tone is the sand colour, the darkest is the brown and the olive green is the intermediate tone. It would appear that all armoured vehicles had some variation of this camouflage patterning applied and this extends to armoured trains as well, of which the Poles used several.

Camouflage paint also appears to extend to use on some soft-skinned vehicles, although most of these along with the artillery would generally remain in olive green.

The Polish military appears to have eschewed the use of all insignia and tactical markings on their armour, and what markings they did have appear to have been removed at the outbreak of hostilities.

None of these vehicles would survive into use with Free Polish forces, and they would in turn go into action utilizing British-supplied equipment in the standard colours of British forces except for Polish formation markings.

Airbrush Method

The camouflage used by the Polish army was quite a bit more advanced than that used by most of their contemporaries in the late 1930s and is at its best when replicated using an airbrush as the real patterns were sprayed and featured soft, feathered edges.

We will be painting a 1/72 scale 7TP produced by First to Fight models.

Step 1: Grey primer

As the basic sand tone of the camouflage is quite pale, we will be using a grey primer for this model as black could prove too dark and require excessive coverage.

If you wanted to ensure that all of your recesses were already shaded in black, you could prime the model in sub-assemblies with a black spray first before assembling the model and giving it a zenithal coat of grey primer. A zenithal coat is one in which you spray the model from approximately 45 degrees above, allowing some areas to remain in shadow.

Brush used	Paint used
Rattle can	Halfords Grey Primer

Step 2: Light Grey Sand

We will now spray the tank with the light sand colour. The tone used by the Polish army was a pale, slightly grey sandy tone. We will apply several

light misted-on coats of the sand paint until a solid, smooth opaque tone is created.

As there is such a heavy application of disruptive tones over this, painting each panel individually for surface tone changes is largely unnecessary at this stage.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 121 Pale Stone

Step 3: Olive Green camouflage

We will now apply the first colour of the camouflage pattern. You will need to be comfortable freely spraying fairly tight lines of paint so practise first on some card to ensure that the paint and airbrush are performing as you want them to and be prepared to tweak the paint mixtures and air pressure.

Starting from the lower front of the vehicle, spray broad horizontal lines of green paint around the vehicle. Use pictures of the real vehicle as a guide to how thick these should be, but ensure you leave room for the sand and brown areas to be present as well.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 117 US Light Green

Step 4: Dark brown camouflage

We will now repeat the previous process of applying horizontal lines of camouflage paint, this time using dark brown paint. Again test that your paint is spraying smoothly and with a good degree of control before applying it to the model. Working from the front again, add the dark brown stripes so that roughly a third of each of the tones is present on the vehicle.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 173 Track Colour

Step 5: Finishing off

We can now finish the model with some weathering, transfers, detail painting and a final coat of varnish if you prefer. It is worth noting that the majority of Polish vehicles during the campaign of 1939 appear to be

relatively clean and lacking in significant weathering and wear and tear. As such, this model has simply had an oil wash applied over it, and then had an enamel pigment wash applied to the lower hull and suspension areas.

Brush Painting

Brush painting any spray-applied camouflage can be a challenge to get it looking authentic. However, it is possible to create a similar effect using the stippling technique. We will also be using a spray paint to establish the initial colour of the model; however, if this is not an option for you, wash the plastic thoroughly and then use the pale stone paint used in Step 2 of the Airbrush guide above.

The model used here is a plastic kit in 1/72 of the TKS produced by First to Fight models.

Step 1: Sand primer base

For this model we will be using a sand-coloured spray primer. You will want a tone that is quite light and ideally with a touch of grey or green to it.

Give the model a smooth even coat, being careful not to flood any detail while also ensuring that you do not hold the can too far away and create a rough surface texture.

Brush used	Paint used
Rattle can	Citadel Zandri Dust

Step 2: Olive green camouflage

We will now start to apply the disruptive scheme. Firstly we will apply the olive green, using a small, fluffy and stubby dry brush. Thin the paint as you would if you were going to be applying it normally by brush, also dampen the brush and then use a stippling action to apply the paint to roughly a third of the vehicle's surface in roughly horizontal lines. Take your time and allow the paint to build up colour gradually.

Brush used	Paint used
Small round dry brush	Humbrol 117 US Light Green

Step 3: Dark brown camouflage

To apply the dark brown part of the camouflage, we will again use a damp brush to stipple some thinned paint onto our model.

Aim again to cover around a third of the vehicle's surface using mostly horizontal lines and blobs. Given the darkness of the brown

paint, you will find that the opacity builds up quickly so should only require just one coat.

Brush used	Paint used
Small round dry brush	Humbrol 173 Track Colour

Step 4: Light sand dry brush

This is an entirely optional step; however, it will serve to really enhance the detail of the model.

Using a medium to large soft dry brush, we will apply a careful dry-brushed application of a light sand colour. Ensure that the brush is dampened and the majority of the paint is removed before commencing dry brushing as we just want to create a fairly subtle effect of picking out the details on the model's surface.

Brush used	Paint used
Medium dry brush	Humbrol 121 Pale Stone

Step 5: Finishing off

Finally we can now paint the details, add relevant transfers and add any surface weathering we want. As noted earlier, Polish vehicles tended to be quite clean and not overly weathered during the campaign of 1939. That said, with this model I have given it an oil paint wash all over, then

lifted the paint from the majority of the model; with the small size of the vehicle this helps to give it a sense of mass and weight to the surface. The TKS was finished off with a light coating of enamel pigments to the suspension areas.

5

German Vehicles: Camouflage and Markings

Following the rise to power of the Nazis in 1933, rearmament of the German armed forces began at a rapid rate. This led to a rapid development programme, mostly conducted in secret and with the assistance of the Soviet Union, soaking up modern tactical thinking and theories currently being developed across Europe and especially those of combined arms warfare coming out of Britain at the time.

The evolution of what has become known as blitzkrieg or lightning warfare stems from the classical Prussian military doctrine of concentration of force and exploitation of the breakthrough to take ground quickly. This stems from Germany's inability to sustain protracted warfare due to comparatively limited resources and manpower.

By 1939 this method of warfare had evolved into using air and armoured formations to break through opposition front lines, and then press this advance into the enemy's rear. Speed was vitally important to prevent effective defence being mounted and areas of significant resistance would simply be bypassed as much as possible.

Logistics, however, were the most significant failing of the German armed forces during the entire war. While perceived as being a heavily mechanized force of tanks with infantry riding around in half-tracks, in reality 90 per cent of the German army went to war on foot or on bicycle, with supplies being brought forward by horse-drawn wagons.

German camouflage went through a number of evolutions through the pre-war, early war and later periods of the conflict. Up until 1937 German vehicles had received a camouflage painting of light brown, dark brown and green before switching to dark grey with brown patterning and then dark grey before adopting a three-tone camouflage of sand, green and brown paints in the latter half of the war. Note that all German vehicles followed the same set of painting guidelines, regardless of their being from the Heer (land army), Waffen SS, Luftwaffe, Kriegsmarine (navy) or any other sector of the military.

For the period covered by this book we will mostly be concerned with variations of panzer grey or more accurately *Dunkelgrau* (dark grey) and how and why it was used, as well as changes due to regional operations.

Dunkelgrau was introduced as the standard camouflage colour for German military vehicles and equipment in 1937, with armoured vehicles receiving a *Dunkelbraun* (dark brown) disruptive pattern on top of this. Both of these tones were extremely dark colours and are therefore quite hard to differentiate in black and white photos from the period.

Quite shockingly, although also highlighting just how poor the German logistical system was even before the war, individual units were expected to purchase the paint for their vehicles themselves. That said, there does appear to have been a high degree of uniformity in colour and this may have been why dark greys and dark browns were used as opposed to the more common olive green tones used by other armies as these were far simpler paint tones to manufacture consistently.

Application of both tones was to be via spray gun as a soft demarcation between grey and brown was intended. In practice, however, this was not always the case and examples of hard-edged demarcation where the paint was applied with a brush can be found.

At the end of the French campaign, in July 1940 the order was given to cease applying the *Dunkelbraun* disruptive pattern, and I'm sure to the relief of many, units were no longer required to purchase their own paint. It is possible, however, that these orders may simply have been catching up with the practical reality of operations and that most units had not been applying the brown paint prior to the invasion of the West but, as stated previously, this is very hard to discern just from black and white photos.

Vehicles going into action in the campaigns of 1941 were therefore painted solely in *Dunkelgrau*, with winter whitewash applied once the snows arrived. This largely remained the case until the introduction of three-tone camouflage in February 1943.

This being the German army, however, nothing was ever quite that simple, and excluded vehicles operating in tropical areas such as the Mediterranean theatre (including North Africa), as well as Southern Russia (notably the Caucasus and Stalingrad campaigns). Vehicles in North Africa were to be repainted in a disruptive pattern of *Gelbraun* (yellow-brown) and *Graugrün* (grey-green), with units again expected to supply their own paint. In practice, however, most vehicles on arrival in North Africa were given an overspray of *Gelbraun* and some not even getting that, with the two-tone pattern not really appearing until supply lines stabilized in 1942. Interestingly, some vehicles in Russia also received this

overspray, although it was confined to swathes of paint in a disruptive pattern over the *Dunkelgrau*.

In 1942 a further new paint scheme was introduced for the theatre, with *Gelbraun* being replaced by *Braun* (a sandy-brown tone), and *Graugrün* by *Grau* (a greener-grey khaki tone). At this point, vehicles in this two-tone scheme were also being painted at the factory and being deployed to operations in Southern Russia as well as to the North African campaign.

This final scheme was really very similar to the three-tone one that replaced the traditional grey paint, and the grey vehicles seem to have disappeared fairly quickly, either repainted or part of the huge losses suffered by the German army between 1942 and 1943 with only the occasional soft-skin vehicle surviving in grey until the war's end.

National markings evolved quite significantly between 1939 and 1943 as well as at the outbreak of war, and a simple white or yellow cross was applied to the sides, rear and sometimes the front of armoured vehicles. However, experience showed that these crosses were far too conspicuous, especially given the dark tone of the grey paint on the rest of the vehicle, and following the Polish campaign this solid colour cross was replaced with a black one with a white outline on the edges. The style of the cross varied a little, starting as quite a slender shape before standardizing into a relatively squared-off symbol.

Swastika were rarely painted on vehicles except on upper surfaces as air recognition symbols, and more common in this role was the use of swastika or colour panel flags, which were often orange but could be in other colours, and areas of the engine decking were painted with white rectangles.

The German armed forces made extensive use of tactical markings in the form of divisional symbols and numbers painted on their vehicles. Each division and sometimes even a regiment within a division generally had a symbol unique to them that would be applied to the front and rear of their vehicles. The 21st Panzer Division used one that appears like a stylized letter 'D' with a horizontal line through it.

It was very common to see a three-digit series of numerals painted on German vehicles, although this could and did vary between formations. These numbers generally represented the vehicle's company (numbers 1 to 8), platoon (1 to 4) and individual vehicle number (1 to 5). So a vehicle marked 123 would be from the first company, second platoon and be vehicle number 3.

At the start of the war and into operations in the West, these numbers generally took the form of either solid white or yellow figures and were painted on the turret or hull. Due to issues of being conspicuous, as the campaigns progressed it was not uncommon for these numbers to be painted as an outline by the time Operation Barbarossa began, although black or red numerals outlined in white are also not uncommon.

Vehicles operating in North Africa were supposed to use the same system; however, both the 15th and 21st Panzer divisions used modified variations of the numerical system. The 15th only painted a single digit on their vehicles, that of the company, while the 21st painted two digits on theirs, that of the platoon and the individual vehicle. These could be painted in solid black, red or either of those colours outlined in white.

This is a far from exhaustive list of paint schemes, symbols and markings for the period to 1943, and to cover them all would probably require a book in itself. As such, I have focused only on what is perhaps most representative of the period.

BLITZKRIEG CAMOUFLAGE

Airbrush Method

Painting early war German vehicles in their *Panzergrau* (panzer grey) scheme opens up quite a number of unusual challenges in modelling. This is a very dark colour when new, almost black in tone, so if you were to truly replicate it accurately, the models would look incredibly dark and appear wrong to the eye, despite being prototypically correct.

Airbrushing allows us to add in some subtle surface variation to represent fading through exposure to sunlight and layered dust.

The models used for the blitzkrieg section here are Plastic Soldier Company Panzer 38t in 20mm or 1/72 scale.

Step 1: Prime black

As we want to attempt to make the finish of the *Panzergrau* as interesting as possible, we will start with a black primer. This will serve both as a primer and also as the first layer of paint on the model so it is important to be thorough with your coverage, and you may require a second pass of the primer to ensure a solid black base.

As we start to build up tones on the model, this will give the deepest shadows a solid black base to work up from. I've used a rattle can; however, you can use a black primer for airbrushing if you prefer.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: *Panzergrau*

We will now start airbrushing on the *Panzergrau* and you should use a very dark grey paint for this. To start showing some contrast between shadow and the main armour panels, we will spray the grey carefully into the armour plates and details, ensuring that the edges and shadows

remain darker than the centre of the plates. If you wish, you could choose to move onto detailing and weathering the model now if you wanted to represent a newly delivered vehicle.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 32 Dark Grey

Step 3: *Panzergrau* highlight

To further add some interest to the surface of the model we will airbrush a mid-grey colour into the centre of the armour plates, armour surfaces and edges of armour panels to create a highlighted effect. This is an optional step as the colour will appear lighter than is strictly accurate for a true representation of *Panzergrau*.

This stage does require a fair bit of control as you're spraying as you need to be quite neat in your work so it's worth practising a bit on a spare model or some card before starting to highlight your model.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 27 Sea Grey

Step 4: *Dunkelbraun* or *Sandgelb* (sand yellow) camouflage

If you are modelling a vehicle from 1939 to 1940, you will want to apply the dark brown disruptive pattern. This should cover roughly a third of the vehicle's surface and be painted with a very dark brown. This can be hard to see in period photos as tonally it is very similar in black and white images so that should help determine how dark a brown is required for your model.

Alternatively, if you are modelling a vehicle in Southern Russia in the summer offensive of 1942 on the approach to Stalingrad, you could add sand yellow stripes. Either way the process is the same and depends upon which campaign you are modelling.

I have sprayed the camouflage pattern onto the model without masking; however, you could use masking putty as covered in other camouflage guides in this book if you want a harder edge to your pattern or do not want to risk excess overspray along the edges of the camouflage.

Vehicles operating in the campaigns from 1941 would not have this camouflage.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 251 Dunkelbraun (1939–40) Humbrol 225 Middle Stone (1942)

Step 5: Masking air recognition panel

To represent the recognition panel utilized on vehicles serving during the 1939–40 campaigns and possibly later, we will need to mask off a rectangular area on the tank's engine deck. Depending on the shape and complexity of your vehicle's engine deck, you may need to use a thinner tape suited to shaping contours. Thankfully the 38t is very simple so we can just use some standard 6mm kabuki tape to mask off the area. It is also probably worth masking off the rest of the vehicle as well to protect it from any further overspray.

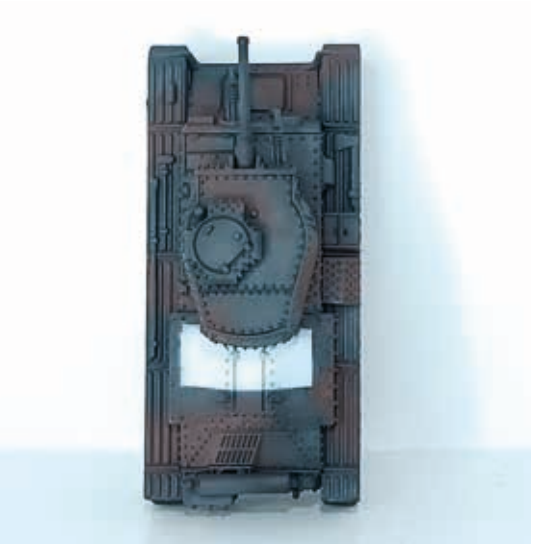
Brush used	Paint used
N/A	Masking tape

Step 6: Air recognition panel

We will initially apply a light coat of white paint to form a seal and prevent any paint bleeding under the tape, then once this is touch dry you can spray a further layer or two until the colour is suitably opaque. I have used white here, although yellow, orange or red may also have been

used. Avoid spraying the paint on too thickly as this will run under the masking tape and also form a skin that will create a ridge or possibly even pull and tear the paint when you remove the masks.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 34



Step 7: Varnishing and finishing

With the major parts of the model now painted, we can go on and add transfers, paint the details and add weathering to the model before sealing it with a layer of varnish. If you are going to be using oil paints

to weather the model, I would suggest varnishing the model now and allowing it to dry overnight before going on to complete those final steps.

To finish this model I have applied the transfers using a significant amount of decal setting solution and then allowed the model to dry thoroughly before using the following techniques detailed in the weathering chapter of the book. A pin wash, dust effects and rust for the exhaust were all used here.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Winsor and Newton Galeria Matt

Brush Method

Panzergrau can be quite challenging to brush paint and still maintain an interesting appearance to the model as it is very easy to end up with a finish that is either too light, too dark or just very flat.

Here I will be demonstrating a method of painting the scheme using a series of dry brushing techniques and stippling to add volume to the painting process. While I've used this scheme with a *Panzergrau* model, you can translate this process to any of the other camouflage patterns detailed in the book.

Step 1: Black primer

As we will mostly be dry brushing this model it is important to have a black base to work from. Dry brushing can be quite unforgiving with any

texture or brush marks on the model so it is important to use a good quality primer that will give you a smooth surface finish.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Dry brush *Panzergrau*

The dry brush technique we will be using here will require a medium dry brush. This is a brush with soft bristles that are quite short and stubby, and is ideal for using a stippling method to build up the volume of paint.

It is worth touching the bristles of the brush to some damp tissue before commencing loading the paint as keeping the brush damp will reduce any streaking or chalkiness. It is important to clean your brush regularly as well to prevent paint drying as this too can harm the effect on the model.

Apply the dark grey paint across the entire surface of the vehicle. You are aiming for an even coverage while maintaining the black primer in the areas of detail and shadow.

Brush used	Paint used
Medium dry brush	Humbrol 32 Dark Grey

Step 3: First highlight

We will use the same technique of stippling the dark grey paint onto the model to add highlights to it. Using a medium grey paint, stipple the paint into the centre of armour panels, allowing some of the dark grey

to remain visible. The intention here is to add additional levels of texture and visual interest to the vehicle.

Brush used	Paint used
Medium dry brush	Humbrol 27 Sea Grey

Step 4: Second highlight

We will now add a second and final light grey highlight to the model. It is important to be quite restrained here as the tank could easily end up appearing far too pale. As such, once you have loaded the paint onto your brush, remove as much as you can with some card or tissue. Now flick the brush over the surface of the model, focusing on raised and prominent details such as rivets and the edges of armour plates. If at first there is not much contrast with previous layers, keep dry brushing on additional levels of highlight until you have achieved an appearance with which you are happy. It is better to work slowly and gradually build up

the effect rather than going in with one heavy dry brush that leaves the model appearing chalky.

Brush used	Paint used
Medium dry brush	Humbrol 64 Light Grey

Step 5: Shading wash

The model may now appear a little too pale in tone. To darken the model back down again, we will apply a wash all over the tank. You could use oil paints, mix your own or use a pre-mixed wash. I will be using the latter as this is the best way to ensure consistency across a collection.

Using a broad flat brush, we will apply the wash all over the surface of the model. If the wash starts to run or pool, use an old brush to carefully lift off the excess paint. The end result should be a darker, more unified finish across the model but with the detail still popping out nicely, especially when looked at from gaming distances.

Brush used	Paint used
Size 2 flat shader	Army Painter Strong Tone

Step 6: *Dunkelbraun* camouflage

As these vehicles are representing those operational in the campaigns between 1939 and 1940, we will paint on a dark brown disruptive pattern. If we were doing one in Southern Russia in 1942, we could apply a dark sand pattern instead.

These patterns could be either hard- or soft-edged so we will not need to mask the pattern out and can simply freely apply paint to the model. Aim to cover roughly a third of the vehicle's surface with broad, wavy stripes.

For the first layer keep the paint thin, and just map out where you want the camouflage areas to be. These will be easy to clean up with a damp brush if you are not happy with them. Once you are satisfied with the way the pattern is looking, you can go back and apply another layer or two of paint to get a greater depth of colour.

Brush used	Paint used
Size 2 round	Humbrol 251 Dunkelbraun (1939–40) Humbrol 225 Middle Stone (1942)

Step 7: Masking recognition panel

Although universal to all the vehicles in this time period, for those operating in the initial campaigns of the war adding a recognition panel

can add some visual flair to the model. It is advisable to allow the model to dry thoroughly before applying masking tape to a painted surface. Using four strips of thin masking tape, mask off a rectangle on the vehicle's engine deck.

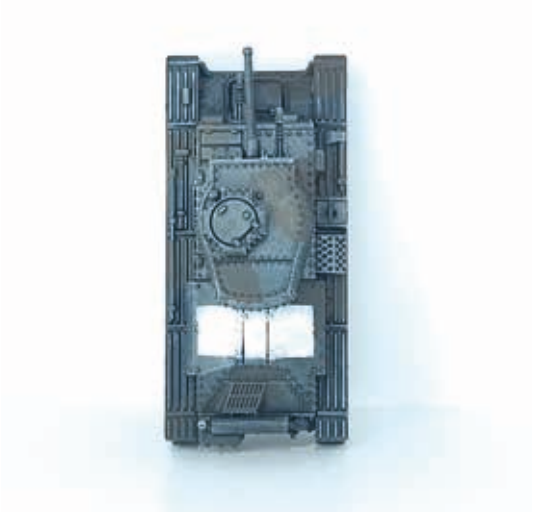
Brush used	Paint used
N/A	Masking tape

Step 8: Painting recognition panel

When it comes to painting on the recognition panel, while you could use a conventional brush and techniques to apply the paint, to add texture to the model as well as limiting the risk of paint running under the masking tape we will use the stippling technique to apply the white paint.

Simply load up your medium dry brush, remove the excess and then stipple the paint on, allowing layers to dry before adding more paint to build up the depth of colour. Once you are happy with the finish, remove the masks.

Brush used	Paint used
Medium dry brush	Humbrol 34 White



Step 9: Varnish and finishing

The model is now ready to be finished off. I would advise applying a layer of varnish now if you are intending to use enamel or oil-based weathering products as these could possibly harm the paint underneath due to the potentially damaging nature of their thinners.

After varnishing this model received a surface wash of oil paints, chipping effects and a heavy coating of dust. With the weathering applied, it is easy to see how the dark brown part of the early camouflage pattern disappears in period photographs.

Brush used	Paint used
Size 2 flat shader	Winsor and Newton Galeria Matt

DEUTSCHES AFRIKA KORPS

Airbrush Method

In this guide we will be painting the *Panzergrau* with oversprayed sand paint. Due to space considerations, representation of the later pattern used towards the end of the campaign can be recreated with the methods used for the grey European schemes above, substituting the *Panzergrau* for a sand tone or *Gelbraun* and the *Dunkelbraun* with a khaki colour. These correspond with Humbrol 93 Desert Yellow and Humbrol 72 Khaki Drill.

Kits used for both the *Afrika Korps* guides are S-Model 1/72 Panzer III.

Step 1: Black primer

As ever, we will begin with a black primer. I prefer using a black base as opposed to a primer coat close to the base colour as it gives more depth and detail to the final paint job. However, it is an extra step so you may instead prefer to use a dark grey spray paint for the base coating.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: *Dunkelgrau* base

As the real vehicles were sent over to North Africa in the standard *Dunkelgrau* paint, we will begin by giving the tank an initial layer of dark grey paint. As we will be adding extra layers of paint over this, we do not need to do too much in the way of adding definition. Ensure that you have given the model a smooth, even layer of dark grey all over.

Keep an eye out for any dust, hairs or debris that may have adhered to the paint as when we start chipping the paint, anything like that will

be massively highlighted in the weathering process. It's also important to let this layer of paint fully cure and harden off so allow it to dry overnight before moving on to the next step.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 32 Dark Grey

Step 3: Chipping fluid

Chipping fluid or chipping medium is a product intended to reactivate what is underneath and allow you to remove layers of paint to create realistic-looking worn or damaged paint. There are many commercially available chipping solutions, but you can also use cheap hairspray to get the same effect, although hairspray runs the risk of being too heavy an application that looks out of scale on the model.

To apply the chipping fluid, we will airbrush several light coats onto the tank. You are aiming to achieve a smooth even coverage, and if the fluid starts to run or pool you can lift these pools or puddles with a paintbrush. It is important to prevent any pooling of the chipping fluid as when the time comes to reactivate and chip the paint you may well lift the entire area of pooling.

Step 4: *Sandgelb*

When using chipping fluid timing is very important. Once the medium has started to dry, you only have a few hours before everything cures and sets to the point where it can't easily be reactivated. There is some trial and error here so I'd advise practising first before going straight to your models.

With the chipping medium having dried, we will now give the model a coat of sand paint. Apply the paint in light, misting layers. Depending on how worn you want the paint to appear, for a smoother, neater finish apply the paint as you would normally to get a solid base colour. On this model I am going for a more heavily worn and faded appearance so have given it a lighter, patchier coat of paint.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 225 Middle Stone

Step 5: *Sandgelb* highlight

Again, working quickly as timing is important, as soon as the previous layer of sand paint is visibly dry, i.e. not shiny and wet, we will apply a highlight. This is an optional stage, but adds a nice level of detail to the paint job, serving to both enhance the moulded-on detail and also adding a degree of fading to the sand paint.

You can either mix some buff paint into the previously used colour or use a lighter pre-mixed paint as both work well here. Spray this highlight over any raised details, edges of armour panels and vertical surfaces; anywhere that would naturally be exposed to most sunlight.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 93 Desert Yellow

Step 6: Chipping

Once the sand paint and its highlight have had an hour or so to dry, you can begin the chipping process. Get some warm water – from the hot tap is fine – and paint this all over the model using a broad brush. Give the water a minute or two to activate the chipping fluid, and then you can begin chipping to reveal the dark grey paint beneath. To chip the paint, you can scrape along edges and details with a cocktail stick for a less heavily worn look, lightly using the point to abrade the sand paint. For a more heavily weathered appearance, use an old paintbrush and essentially use the dry brush method to remove paint.

Whichever option you go for, it is important to remember that less is more when it comes to applying pressure to remove paint as it is very easy to go straight through and wear the paint down to the plastic. If this happens, it is easily fixed by simply reapplying some dark grey paint to any areas of wear.

Brush used	Paint used
Old worn paint brush	N/A

Step 7: Dusty overspray

It is important to seal the model with varnish now to prevent any further activation of the chipping medium. Once you are happy with the effect you have created, allow the model a few hours to fully dry and then spray on some varnish.

If you want to add a further level of wear to the finish, you can mix a small amount of buff paint into the varnish. This will unify all the colours and levels of chipping together for a more natural appearance. As a rough ratio I'd recommend 90 per cent acrylic varnish to 10 per cent paint.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Winsor and Newton Galeria Matt + (optional) Humbrol 74 Linen

Step 8: Finishing

Leave the model to fully dry overnight and then go on to add transfers, detail painting and any further weathering you wish to complete the model. This

model has been finished with transfers added, a pin wash and then some enamel wash dust weathering applied to it as detailed in the weathering chapter.

Brush Method

As with the airbrush method, we will be representing the scheme of field-applied tropical paint. If you wish to represent a vehicle in the later scheme of sand and khaki-grey camouflage, follow the techniques covered in the Polish chapter for applying soft-edge camouflage with Humbrol 93 Desert Yellow as your base tone and Humbrol 72 Khaki Drill as the disruptive pattern.

Brush-painting the weather scheme can seem quite daunting as chipping medium doesn't work well with the process; however, there are very simple solutions to this that give an equally effective result.

Step 1: Dark grey primer

For this vehicle we will skip priming the model in black and instead will use a dark grey spray paint. As the next stage will be using very heavily thinned paint, we want to reduce the risk of having brush marks or streaks in the paint so applying straight to the smooth surface achieved with a rattle can is ideal here.

Ensure that you give the model a solid coat and that no areas of bare plastic remain. It may be worth spraying the model in more sub-assemblies than usual to achieve this. In this case I have left the track units off the model.

Brush used	Paint used
Rattle can	Humbrol 67 Tank Grey

Step 2: *Sandgelb* layer

We will now apply the initial layer of sand yellow. Thin the paint until it flows well and apply a smooth, even coat over all of the model's surfaces. Given the darkness of the grey tone below this will still appear quite dark and probably show through in some places.

For fresher, newer-looking vehicles apply a second coat of sand paint until the opacity reaches a level you are happy with. On this model I have used two coats, the second applied after the first has had time to dry.

Brush used	Paint used
Size 4 round	Humbrol 225 Middle Stone

Step 3: *Sandgelb* highlight (optional)

To add another level of visual interest as well as some additional fading to the paint, we will give the model a stippled on dry brush highlight.

This is an optional stage, but will give an extra degree of texture as well as helping the model's details to stand out.

Using a large, soft round brush we will use a tone lighter shade of sand paint to dry brush over the surface of the model and pick out the details. We will focus the dry brushing around armour panels and raised details.

Brush used	Paint used
Medium dry brush	Humbrol 74 Linen

Step 4: Chipping

To represent chipping on the model, you can either dry brush a dark grey paint around areas of wear and use on the model or you can use a piece of sponge. I prefer to use packing sponge for this, placing a small piece in a straw and then using a stippling motion to add chips of dark grey to the areas of wear on the vehicle. This would be around hatches, maintenance areas and anywhere the crew would typically be moving as well as around the edges of the vehicle.

I have matched the paint to that used for the basic grey tone to ensure that the colours are consistent across the finished model.

Brush used	Paint used
Packing sponge	Humbrol 67 Tank Grey

Step 5: Finishing off

With the model now painted, you can proceed to adding transfers and weathering. On this model I have added transfers, but gone for fairly minimal weathering as the paint job is quite complex. Here I have simply given the model a heavy coating of enamel dust effect before cleaning most of it from the surface of the tank, leaving it with a very dusty appearance.

Above left and above right: ***This Panzer III represents a vehicle operating in Russia during 1942. It was painted using the same process as for the panzer grey scheme using a sand tone instead of the dark brown.***

These StuGs are in a simple panzer grey scheme and represent vehicles operating during the campaigns of 1941 to 1943.

This Tiger is a vehicle operating in Tunisia in 1943. It was painted using the same techniques as the airbrush grey scheme using light sand tones.

6

Italian Vehicles: Camouflage and Markings

In the most simplistic of terms, with Benito Mussolini's ascent to power in 1925 the new Fascist government sought to reverse Italy's poor financial condition by creating a new Italian empire across the Mediterranean. The flaw in this plan, however, was of course that significant parts of North Africa were already part of other nations' colonial interests,

and those nations that weren't colonized had at least some diplomatic support. Thus when Italy invaded Ethiopia in 1935, they were met with significant and punishing trade sanctions, pushing Fascist Italy into a state of economic isolation.

This isolation would lead Italy to gain closer ties with Nazi Germany and Nationalist Spain. Italy's armament programme reflected their limited financial and industrial means. Despite the army's growth being intended to create a massive force, actually supplying these men with modern equipment would prove to be a significant challenge.

The majority of armoured vehicles produced by Italy would be small, light tanks with limited armour, firepower and reliability. During the German invasion of France, for example, Italy contributed an attack through the Alps with the only armour support being a force of tiny, machine-gun-armed tankettes.

That same Italian army used several types of camouflage from the inter-war period into the Second World War. Pre-war and during the operations into France in 1940, vehicles were painted a rusty red tone with small, irregular patches of dark green.

As the larger, more conventional tanks such as the M13/40 entered service, a new standardized paint scheme came into use. This comprised a base tone of *Kaki Sahariano* (Saharan khaki), which was a warm, golden-yellow sand colour. To this, reddish-brown and olive-green disruptive patterns could be added. The first of these patterns to be adopted, the *Imperiale*, used small, neat vertical stripes of these colours.

This was superseded by the *Continentale* pattern, which essentially used the same colours although in a heavier disruptive pattern of irregular swathes across the vehicle. These varied from small to large blobs of colour with only minimal amounts of sand yellow appearing in between them. It was also not uncommon to see vehicles with camouflage of either one or other of the greens or browns applied in a variety of patterns.

The Italians also used monochromatic camouflage schemes, either of plain *Kaki Sahariano* or a greyish-green tone. With all of these, they appear to have been used wherever the Italian army was fighting, and although the majority of tanks in Africa would probably have been in the plain *Kaki Sahariano*, some

of the greyish-green vehicles were also present there. Vehicles operating in Russia would also feature all these camouflage schemes and in winter would be camouflaged with a whitewash in a similar fashion to German vehicles.

Markings on Italian vehicles were fairly restrained, typically comprising a number plate to the front and rear of the tank featuring red lettering with the initials for the Royal Italian Army and Arabic numerals for the vehicle's registration number. On the sides and rear of the vehicle, generally on the turret if one was present, were painted small rectangular tactical markings. These markings comprised coloured rectangles with a series of white painted vertical lines running across them and a number painted above. The colour of the rectangle denoted to which company the tank belonged: red for first company, light blue for second company and yellow for third company. A black rectangle denoted company headquarters, while white denoted regimental headquarters.

Through this, one, two or three vertical white lines would be painted (or black for regimental HQ vehicles). The number of bars corresponded to the platoon number of the vehicle. On top of the rectangle a number painted in the company colour of either Roman or Arabic numerals would be painted denoting the individual vehicle's number. So a yellow rectangle with two bars and a number '4' painted above would be the

The tactical marking here represents a vehicle from the 2nd Company, 2nd Platoon, fifth vehicle.

This vehicle is from the 1st Company, 1st Platoon, first vehicle.

fourth vehicle of the second platoon, third company. These markings appeared on tanks, assault guns and armoured cars. Soft-skin vehicles appear to have been mostly left without the disruptive patterns applied, although this is by no means universal.

CONTINENTALE CAMOUFLAGE

As Italian vehicles had a fairly broad array of camouflage patterns during the period 1939–43 I will have to limit the painting guides to the most prevalent schemes: the sand-tone ones with a later disruptive scheme and then the green-grey colour. While normally the sand scheme would be most commonly seen in North Africa, both the green and sand appear to have been used by the Italian army wherever it was operating. The vehicles in this particular part of the guide could represent those operating at the end of the North African campaign, in Sicily, Italy or anywhere else.

For this method we will in essence be breaking the guide into two stages. The first will describe how to paint a vehicle in the standard sand tones used on many Italian vehicles. Then we will look at how to add the disruptive camouflage patterns. These will require a bit of fine airbrush work, but equally will give a very nice finish.

The kits used in the Italian guides are all Italeri 1/72 scale Carro Armato M13/40.

Airbrush Method

With this model we will be treating it as if we were painting a monotone vehicle with no camouflage. If you are adding a camouflage pattern, either single or two-tone, it's probably worth skipping the final stage highlight spray as this could make the model appear a little too busy and have too much contrast between the various tones.

Step 1: Prime black

We will begin by giving the model a layer of black primer. This will serve as an initial level of shading and also allow us to build up bold rich tones with

the sand paints. Easy build war games models like this are ideal subjects for spraying in sub-assemblies too. I've left the track and suspension units separate so they can be thoroughly primed. They can then be attached to the model once the primer has cured. The extra layer of paint should give you a solid join through contact friction, but will still allow you to pop the parts off for weathering later on if you wish.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Dark sand base tone

Our first layer of sand paint will be quite a deep, rich sand tone. This is important as it will serve as a bridge between the black primer and the next level of sand paint. We will spray the dark sand colour over the entire model in light, misting coats so that it will key to the surface

without risking the paint building up too thickly. You do not need to start outlining panels or extra detailing at this stage; simply ensure that you have good, solid coverage over the tank.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 225 Middle Stone

Step 3: Desert sand mid-tone

The sand paint we apply now will be our middle tone and represent a close match to the paint used on the original vehicles. We want a golden sand-type tone, which will appear several shades lighter than that used in the previous step.

Spray the paint as if you were painting each panel and detail area individually, allowing the darker colour to show through in the shadow areas, on edges of armour plates and so on. I would recommend thinning the paint and adjusting the air pressure so that you have a fine degree of control over the paint. As such you may need several passes of the sand tone to build up the strength and opacity of colour.

If you are going to be adding a complex camouflage scheme or large patches of either the green or brown colours, skip the next step and go straight to applying the disruptive scheme.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 93 Desert Yellow

Step 4: Desert sand final highlight

If you wish to add more contrast to the surface of your model and represent some faded and worn paint, you can now add another level of highlighting to the tank. As in the previous step, ensure that the paint is flowing well and that you have a good level of control with minimal spatter; also test how it sprays before applying paint to the model.

For this step you can use either a pale sand paint or mix some white into the paint used in the previous step. Spray your highlight colour in tight controlled patterns, concentrating mostly on the upper surfaces, the centre of armour plates and most prominent parts of the suspension such as the outermost wheels or suspension components.

You should now be left with a subtle graduation from a dark sand through to a pale sand finish. You can now go on to complete detail painting, adding transfers and weathering if you wish to represent a vehicle in a plain sand scheme.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 74 Linen

Step 5: Green camouflage

Italian vehicles had a pretty vast range of disruptive schemes applied to them, varying from broad blobs of just one colour to highly complex squiggles and stripes. Here we will be painting one that combines some of each and using both the green and brown disruptive schemes.

We will begin by applying a sharply sprayed part of the green pattern onto the model, covering around a third of the tank's surface in irregularly shaped blobs of olive green.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 159 Khaki Drab

Step 6: Brown camouflage

With the brown part of the camouflage we will use the same techniques as with the green and apply blobs of brown paint around the green ones, leaving areas of sand paint as a demarcation area between them. Try to keep all the blobs of camouflage paint roughly even in size, approximately an even thickness to the areas of sand paint showing through between them.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 186 Brown

Step 7: Details and finishing

If you wish to add a dusty, faded appearance to the model as I have done here, mix a little buff-coloured paint into some varnish and spray this in a lightly misted coat over the model. This will serve to unify the finish, as well as protect the paint when we come to applying oil-based and enamel weathering to finish off the model later.

The tank was finished off with transfers and a simple dust coating over most of the surface. Some sand-coloured enamel pigment was painted over the entire model before the majority of this was removed with a cotton bud.

Imperiale Camouflage Brush Method

Italian camouflage can be tricky to apply without an airbrush; however, it is possible to do so and still retain a sprayed-on effect. The disruptive patterns would also have been brush-painted onto the vehicle; however, for those who like the sprayed effect I will focus on recreating this, although I will also mention how to create a simpler, hard-edged pattern for those who would rather do this.

Step 1: Spray sand

To establish our base colour we will give the model a coating of a suitably yellowish-golden sand tone. You could opt to apply this over a black base to create some zenithal highlights; however, I feel that the contrast between the sand and the black would be far too harsh.

As with the airbrushed version, I would suggest leaving off the suspension units if you can until the model is at least sprayed so the greater access to the tracks and lower hull will be very useful.

If you are unable to use spray paints, give the model a very thorough wash with washing-up liquid and then once it is dry paint the hull with the equivalent colour paint.

Brush used	Paint used
Rattle can	Humbrol 93 Desert Yellow

Step 2: Highlight dry brush

To enhance the detail we will give the model a dry brushing of a light sand colour. This is not intended to add extra volume to the model but is simply to enhance the detail present.

We will use a broad, flat brush that is slightly damp, and then using a light, flicking technique we will dry brush the pale sand colour across the surface of the model, picking out bolt heads, edges of armour plates and so on. If you wish to add further definition you could choose to repeat this process, mixing a little white into your pale sand, and focus this dry brush on the most prominent areas of detail. I have elected not to do so, however, as it could leave the model looking a little too pale. If you are depicting a vehicle in plain sand tones, skip the camouflaging process and proceed to step 5.

Brush used	Paint used
Medium dry brush	Humbrol 74 Linen

Step 3: Green camouflage (stipple)

This vehicle will be portraying a scheme with thin squiggles of disruptive camouflage applied to it in both green and brown. To produce the pattern we will paint short, uneven roughly vertical lines of the corresponding paint across the tank's surface. If you wish to replicate this as a hard-edged pattern, simply use a size 1 or 2 brush with a good point to paint these lines.

To create a sprayed effect we will use a small stippling or dry brush, although you could also use a cotton bud for the same effect. Load the brush with an olive green paint, remove the excess and then using a stippling motion apply the paint to the model in short loose vertical 'S'

shapes. Try to keep these roughly evenly spaced as you want to leave enough room to add the brown part of the camouflage as well.

Brush used	Paint used
Small dry brush or size 2 round	Humbrol 117 US Light Green

Step 4: Brown camouflage (stipple)

For the brown part of the camouflage scheme, simply repeat the process from the previous step using a medium brown with a reddish tone. Again, keep the squiggles roughly uniform in size and shape so that roughly two-thirds of the overall surface of the model is covered by the camouflage.

Brush used	Paint used
Small dry brush or size 2 round	Humbrol 173 Track Colour

Step 5: Pin wash

This is an optional step; however, it will really add some nice definition to the details of the model. More importantly though, it will help to bring all the colours on the model together and give the tank a sense of mass.

We will be adding a wash to enhance and pick out the details of the model. There are numerous products you can use for this from acrylic and enamel pre-mixed washes and panel liners to home-made mixes of acrylic or oil-based paints. If you decide to use an oil or enamel, it is worth sealing the model with a layer of acrylic varnish and letting it dry for twenty-four

hours or so. For ease of availability and access, I will be using an acrylic wash. You will need a fine brush with a good well to it for applying the wash, and a second older, fluffier brush for blending the paint.

Paint the wash carefully into the recesses and around the details of the model, let it dry and set for a moment and then after slightly dampening your larger brush, carefully remove any excess paint. This is a much simpler process using oil or enamel paints; however, this is not always an option for some people.

Brush used	Paint used
Size 2 round for application, size 4 round for blending the paint	Army Painter Strong Tone

Step 6: Finishing

This tank was finished with some rust on the exhausts, transfers and an oil wash all over that was then cleaned off to further enhance the effect of the acrylic wash applied in step 5. Finally some enamel dust effect was applied to the lower hull and suspension areas.

ITALIAN GREEN VEHICLES

Airbrush Method

Painting a monotone vehicle such as one that is all green can initially seem a relatively simple if tedious process. However, given the variables of fading and weathering that can occur, they give an excellent palette with which to push your skills and see what interesting variations in tone you can come up with.

We will be representing a vehicle serving in North Africa so will be painting a relatively simple version of the green that can be used as a solid base for any representation of a green Italian vehicle before applying some distinctive dust effects.

Step 1: Black primer

As we will be building up through quite a significant range of tones, a simple black base coat will give us a good surface to work from. As we have with the other builds in this chapter, we will keep the model in sub-assemblies at this stage before bringing the parts together before the next step and the application of colours to the model.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Airbrush dark green

As Italian vehicles were quite a dark, greyish-green olive colour we will start by spraying with a dark green tone. As the later stages of painting will be adding some significant contrast to the model, we will simply give the tank a smooth, even overall coverage, allowing some of the black primer to remain visible in the deepest areas of shadow, mostly around the suspension areas.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 163 Dark Green

Step 3: Airbrush lighter grey-green

We will now add a greyish green highlight to the model. This will be quite a stark difference in tone; however, we will be applying quite a thin application of paint and gradually building up the opacity as highlights. Spray the grey-green colour so that it is semi-transparent and allow the opacity to build up during several passes of the airbrush.

As you are spraying instead of painting all over the vehicle, paint each individual panel and detail area as closely as you can. If you can pull this off it will result in a nicely shaded vehicle with a significant depth of tone simply from using two paints over a black primer.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 240 RLM02 Grau

Step 4: Airbrush weathering dust

This is an optional step; however, it will really help to make a vehicle based in Africa look the part. I would suggest waiting until you have added any transfers or basic detail painting to the model as these areas would naturally get dusty too, and it will help blend them into the surface of the model.

You will want some heavily thinned buff or pale sand paint for this, but not so thin that it runs. You simply want something that sprays nicely, but without being overpowering and allows the colours underneath to show through. Gradually building up opacity as you spray, paint the lower areas of the armour plates, suspension units and recesses with the dust-coloured paint. You want to create the impression of heavy amounts of dust that have settled onto the surface of the vehicle. Allow the paint to slowly build up in tone and texture, take your time and remember that less is more with this process.

Brush used	Paint used
Sparmax Max 3 0.3mm needle	Humbrol 121 Pale Stone

Step 5: Finishing

Once the model has had transfers applied, although we had added a dust effect some further dust was added once the details were painted and transfers were applied. The model then received some dark brown chipping before getting a heavy coating of sand enamel dust pigment to the lower areas of armour plates and around details. This adds an extra level of depth and weathering to the airbrush-applied dust.

Brush Method

A basic green tank is one of the simplest things to paint; however, it can also be elevated with some readily achievable dry-brushing techniques and washes to make the model really pop on the table top.

Step 1: Prime black

As with all these vehicles we will be priming the model in black. You could opt to use a dark green spray; however, with this one I want some

of the deepest shadows to remain in black so that we gain more depth of tone on the finished model.

Brush used	Paint used
Rattle can	Citadel Chaos Black

Step 2: Dry brush dark green

Using a medium-sized dry brush we will apply a heavy stippling of dark olive green across the surface of the model. Keep your brush damp and clean it regularly to avoid building up brush marks, and as you are dry brushing don't be afraid of leaving the shadow areas black. Between the various stages any stark contrasts will disappear.

Brush used	Paint used
Medium dry brush	Humbrol 163 Dark Green

Step 3: Dry brush mid-green

We will now start to build up depth of tone on the model again. Using a stippling action with a dampened medium dry brush, stipple a highlight layer into each armour panel, allowing the tone to build up in the centre of plates and details while the edges and recesses remain dark.

For this step we will be using a lighter, greyish-green colour. You can either use a pre-mixed paint or simply add some white into that used in the previous stage. For greater finesse, mixing in white will give you more

control over the highlights and you can build these up over several levels by increasing the amount of white mixed in.

Brush used	Paint used
Medium dry brush	Humbrol 78 Interior Green

Step 4: Dark wash

The model may be looking a little light and pale at this stage, so to knock this back as well as add further definition to the model we will apply a wash all over the vehicle. As the goal is to tint the surface colour of the model as well as to highlight detail, I'd suggest using an acrylic rather than an oil wash as this works better on flat surfaces.

You could use either a black or dark brown wash for this; however, I will be using a dark brown as it will add a degree of grimy appearance and

the look of initial weathering and wear and tear at the same time. Apply the wash with a large flat brush using an older, standard brush to lift off any that is pooling or puddling on the model's surface.

Brush used	Paint used
Size 2 flat shader	Army Painter Strong Tone

Step 5: Dry brush lighter green

This is an optional step. However, it can be a good way to make the detail of the model stand out nicely as well as enhance the greyish-green tones. Using either a soft dry brush or a flat brush, give the tank a light dry brushing around the most prominent details and edges with a greyish-green paint.

Brush used	Paint used
Medium dry brush	Humbrol 240 RLM02 Grau

Step 6: Finishing

With the painting mostly done the model has had transfers added, details picked out and an oil wash applied over most of the vehicle's surface before having the majority removed with a cotton bud. The model was finished with an enamel earth pigment wash to the lower part of the vehicle.

Above left and above right: ***Semovente da 75/18. This represents a vehicle with a variation of the*** *Imperiale* ***scheme with a light spray of the camouflage pattern.***

Above left and above right: ***This vehicle portrays a tank in two-tone camouflage as may have been seen in the North African campaign.***

Above and below: ***This Semovente is painted in the simple desert sand colour scheme.***

7

Transfers

Transfers or decals are an excellent way to really add some finesse to your models as well as speed up the modelling process so that you do not need to paint on numbers and tactical markings by hand. They can be a little tricky to apply if you are not used to them, but there are a few tricks to really making them look painted onto the surface of the vehicle.

The vast majority of transfers available are the waterslide variety. These are an image printed onto a carrier film and held on a sheet of

paper which once dampened loosens the bond with the paper and can be slid from the backing paper onto the model itself.

Two problems occur more than others when applying transfers. The first is the transfer creasing or not conforming to the detail on the model. This is caused by the carrier film of the transfer not being able to settle into and around details. It is an especially pronounced problem on tight curves and uneven surfaces such as large bolts or riveted surfaces. There are numerous products to treat transfers to help them melt into detail on the model, but a simple way to get transfers to fit around tight curves is to cut small nicks into the carrier film. This should give the transfer a greater ability to settle into the necessary shapes. For uneven surfaces you will need to ensure that the transfer is properly pressed into the model by rolling a cotton bud over the detail and gently pressing it into the surface.

Silvering is the other major issue you can run into with transfers. This is where the transfer has small air pockets between the transfer and the surface of the model. Many sources recommend using a gloss surface if you are going to apply transfers, although this is not really necessary. The silvering is caused by a surface not being perfectly smooth under the transfer, so as long as you ensure the transfer is pressed down properly it should eliminate silvering. There are also additional techniques you can try which we will cover later in this chapter.

For best results apply transfers after the basic painting is complete, but before you do any weathering.

Simple Method of Applying Transfers

This is the most basic method of applying transfers and is a good foundation to work from with all other methods of applying them.

Step 1: Soak transfer

First trim the transfer from the rest of the backing sheet. It is best to work on one at a time rather than soaking the whole sheet in one go. We will then dip the transfer in a bowl of warm water and lay it on a sheet of

foam. After about thirty seconds the transfer should be starting to move. Slide the transfer onto the model and then position it where you need it.

Step 2: Set into position

Leave the transfer for five to ten minutes and then gently roll a cotton bud over it. Be careful not to move the transfer. You can then repeat rolling the cotton bud over the transfer, applying a little more gentle pressure with each pass. This will settle the transfer to the surface of the model.

Varnish Sealant

If you are applying a longer transfer with some connecting carrier film between images, say some propaganda text on Russian vehicles or turret numbers on German tanks, you may run the risk of silvering. A simple

remedy for this is to paint some medium or varnish under the transfer immediately before applying it to the surface.

Step 1: Prepare surface

While the transfer is soaking, apply a small amount of acrylic gloss varnish or medium to the intended location of the transfer. Be careful how much you apply here as too much will spill out and potentially harm your prepared surface.

Brush used	Paint used
Size 2 round	Winsor and Newton Galeria Gloss

Step 2: Place transfer

While the varnish is still wet place the transfer on top of it and then press down with a damp cotton bud. Dampening the cotton bud will allow you to mop up any excess varnish. Let it set for a few moments and then smooth the transfer onto the surface, being sure to clean up the excess varnish as it is pressed out from the surface.

As the transfer and varnish dry they should create a solid surface that will be protected from silvering. I would strongly suggest applying a flat coat to the model once the transfers are dry, although this is a question of personal taste.

Setting Solutions

There are many setting solutions for transfers on the market. Most consist of a setting solution and a solvent; however, some are just a single setting solution. The two-part products such as Micro Sol/Set and Ultra Decal Fix do tend to be more reliable and give better results. These products work by essentially fixing the transfer to the surface and then melting it slightly, causing it to shrink to the surface of the model. They are the best way to get a painted-on look to the transfers.

Step 1: Setting solution

Soak the transfer as previously described, and while it is soaking add a little setting solution to the surface on which it will be applied and then apply the transfer. Once you are happy with the position, carefully smooth down the transfer with a cotton bud and then apply another

layer of setting solution. Leave it for approximately twenty minutes before proceeding to the next stage.

Brush used	Paint used
Size 2 round	MIG Ammo 2029 Ultra Decal Set 1

Step 2: Fixing solvent

Once the transfer has had some time to settle into position you can apply some solvent. Ensure you have done all the smoothing out you need to do before you go on to this stage as the transfer will be very delicate until it has fully cured.

Simply paint some of the fixative solvent over the transfer and leave it to dry for a few hours. As this product will be breaking down the transfer to the surface of the model, be careful you do not knock or touch it as this can ruin the transfer. In addition, some fixatives can be fairly strong and have the potential to damage paint. While they are fine to paint onto the model, any sort of contact with them is likely to harm the underlying paint. I'd also suggest giving the model a coat of matt varnish once the transfers are dried, which should give them a very pleasing painted-on appearance.

Brush used	Paint used
Size 2 round	MIG Ammo 2030 Ultra Decal Fix 2

114

114

8

Weathering

Weathering is a bit of a catch-all term for applying varying degrees of ageing and a lived-in effect to a model. There are many degrees of weathering from simply applying a little light patina to areas that tarnish naturally such as tracks and exhausts to full-on caked-in mud and grime.

Personally I prefer to add weathering once the model has had its stowage added and painted as well as transfers applied, but before any crew models are added. It's best to think of it as the final stage of the model. Much of this is entirely down to personal taste. Some people

prefer immaculate, fresh-from-the-factory-looking models, whereas others like their models to look more used and still others prefer their models to look absolutely worn and beaten up. There is no right or wrong way to apply weathering as all approaches and results represent a different part of a vehicle's life.

If you want to take a more historical approach to your models it's worth taking a look at photos from the theatre, campaign or even the unit you are intending to model at the time these machines were operational. There are a surprising number of images available that can be found just from a simple Google search that can help you get a realistic idea of the weathering on your models.

During the time period covered by this book the majority of vehicles entering into operations were pretty much brand new and freshly painted. As such they tend to be pretty lightly weathered with this final stage being pretty much restricted to some dust. However, a few months later at the end of the campaign, vehicles tend to look much more worn with scratched and scuffed paint, layered mud and an all-pervasive layer of dust.

Military vehicles, especially those in a combat zone, have a tendency to get pretty filthy very quickly. Mud and dust can quickly accumulate on the vehicle. In hot, dry weather vehicles, especially tracked vehicles, tend to gain layers of dust that can rapidly lighten the underlying paint. Conversely, in wet and wintry weather mud will equally quickly cover the vehicle, being thrown up by the machine as it moves as well as being transported onto it as the crew enters and carries out maintenance.

Grease accumulates around working parts, and layers of dust tend to highlight any fuel and oil spills that occur during vehicle maintenance. You can often see dark stains around filler caps, wheel bolts and bearings.

Rust can give a nice effect, but should be used sparingly. An average combat vehicle such as a tank did not have a particularly long service life and would have been particularly well maintained between major operations. Areas such as grab handles and chipped paint may exhibit some surface rust, but are more likely to have a darker, more worn metal appearance. This will look more like a shiny brown where the metal has tarnished, although it could also be the primer paint showing through.

Paint, especially matt paint, will fade and discolour depending on the local weather conditions as well as the general use and damage to the paint's surface. This has the effect of creating subtle changes to tone on the vehicle's surface. Additionally rain can lead to further discolouration of the surface either through washing off surface dust or carrying dirt from other parts of the vehicle. These can both make for interesting and varied effects on the model that add a lot of visual interest to its surface.

Tracks, regardless of material, nation or how they were treated before being fitted or issued to vehicles, tended to be a dark brown colour as their metal oxidized and primers and preservative paints were quickly eroded from them. Areas where the tracks contacted the ground quickly took on a shiny silver colour. It's worth pointing out that some tracks, particularly those used on some American-designed vehicles and German half-tracks, had rubber contact pads and so didn't get this shiny appearance. It's also worth ensuring that you pick out the guide horns and inner faces of any tracks in silver too as this will represent their contact with the road wheels. While dirt frequently builds up on tracks, when adding earth and ground effects to them it's worth keeping the areas with which the track actually contacts the ground a brighter silver and then adding areas of thicker mud and grass to deeper parts of the external side of the track. Given the constant movement of tracks, the inner facings tended to stay pretty shiny and clean.

We will cover painting the tracks, distressing the paint, adding dust and grime, and creating thick mud as well as adding some rust effects. Not all these techniques will be relevant for every model, but this will give you a tool set to choose from when working on your projects.

Panel Line Wash

Step 1: Apply wash

The easiest way to start adding some level of wear to a model and also enhance the detail is with a panel line wash. This is a neat wash into all the deepest recesses and around the detail that you then tidy up so that the paint remains only in the deepest areas.

I prefer to use artist's oil paints for this process; however, there are many pre-mixed washes and panel liners in a variety of mediums. Acrylic products are probably more beginner-friendly, although they also require you to work on small areas at a time. Here I have mixed up a thin wash of dark brown oil paint and applied it into all the deepest details on the model.

Brush used	Paint used
Size 2 round	Winsor and Newton Burnt Umber

Step 2: Tidying up

With the wash in place, we can now start to tidy up. Use an old but soft brush lightly dampened with thinners to lift away any excess paint you do not want on the model. When using acrylic washes, work on a small area at a time as the drying times are so short with these products. When

using oils or enamels, give the paints ten minutes or so to key into the surface and then you can start to blend them out.

Brush used	Paint used
(Old) size 2 round	White spirit

Tracks

Step 1: Brown base paint

First of all we will add a layer of dark brown paint to both sides of the track, ensuring all areas are covered. This may require two coats. It's important to thin your paint so that it will flow into the details, but be careful you do not over thin the paint and have it flood into or spatter onto areas you've already painted.

This won't apply to most vehicles, but you can also use this colour to pick out the tyres with the same paint at this step if you have not done so already. Use a very dark grey paint, but not black for rubber areas as pure black looks a little too dark for natural rubber, especially at the scales of model we are working with. Naturally this also applies to adding tyres to wheeled vehicles too.

Brush used	Paint used
Size 3 round	Vallejo 822 German Camouflage Black Brown

Step 2: Worn metal

We will now pick out the areas that would wear and be free of tarnishing. I'm going to use a gunmetal tone for these areas. While not particularly visible on this particular vehicle, most vehicles have a drive sprocket with teeth around the outside circumference. These should also be painted in the silver tone you are using, as should the guide horn teeth on each track link that run between the wheels.

Brush used	Paint used
Size 2 round	Citadel Leadbelcher
Size 2 flat for dry brushing	Citadel Leadbelcher

Step 3: Dust

This is an optional step, but if you want to begin making the vehicle appear a little more used you can add a layer of dust to the whole of the vehicle's running gear and suspension. Even if you are intending to add further

dirt and grime to the model, this is still a good starting-point for further weathering. Here I've used a pre-mixed enamel wash, although you can use any method of applying a thin wash if you prefer using a light buff tone.

We will apply the wash all over the relevant areas of the vehicle including the sides, rear and front of the hull if you wish. While the paint is still wet, lift it from the surface of the model without allowing it to pool or become too thick.

Brush used	Paint used
Size 4 round	AK Interactive AK4062 Light Dust Deposits

Step 4: Tyres

Some vehicles may have tyres on their suspension so check your references to see if they do. For those vehicles that do have rubber tyres, pick them out with a dark grey now. We do the tyres at this stage to prevent them getting covered by silver paint when we are doing the chipping on the edge of the tracks. As the Matilda tyres are not particularly visible I have demonstrated them with the Panzer III instead. You should also be able to see the metal areas on the guide horns and drive sprocket too.

Brush used	Paint used
Size 1 round	Humbrol 32 Dark Grey

Paint Chipping and Distressing

As the paint on a vehicle is battered and used, it will gradually start to gain chips and scratches as well as localized discolouration. These are relatively simple effects to replicate, yet they can add a lot of detail to the finish of a model. I prefer to apply these steps by doing the discolouration of the paint first before applying chipping. This allows you to use techniques that are potentially more damaging to underlying paint without harming the more delicate effect of chipping.

Step 1: Discolouration

This stage does really require the use of enamel or oil paints as it involves subtle blending of paints. Acrylics dry too quickly and also have a tendency to not remove as easily as we will require.

We will use several different oil paints and apply tiny dots of brown, buff and grey tones to all the surfaces on the model. This will look completely wrong and unnatural, but that will all be corrected in the next stage.

Brush used	Paint used
Size 2 round	Winsor and Newton Payne's Grey
	Winsor and Newton Naples Yellow
	Winsor and Newton Indian Yellow

Step 2: Blending

We will now blend and feather the dots until they are almost invisible, just leaving a faint trace of pigment on the surface. For a more weathered effect you can adjust how much of the paint you blend out. Dip a medium-sized make-up brush in some white spirit or odourless thinner, dry it on some kitchen paper and then start to blend out the spots with vertical movements of the brush on the sides of the model and a stippling motion on the top.

Brush used	Paint used
Medium make-up brush	White spirit or odourless thinner

Step 3: Chipping and scratches, light tone

Chipping and scratches are relatively simple to add to a model, but can really enhance the appearance of wear and use. You'll need some sponge, and the stuff from figure cases or blister packs is ideal for the purpose. Use a lighter version of the base colour of your vehicle such as a very pale green or ivory colour as well as a dark brown. You can use either of these tones individually or together as I will do here to add more texture to the model.

The easiest way to keep your chipped paint looking irregular is to dip some of the sponge in your light paint and then dab it along the areas of wear. Changing the orientation of the sponge can help to create an

irregular appearance. To form scrapes rather than chips drag the sponge along the surface of the model to make a fine, ragged line. Apply the chipping to areas that would acquire the most significant areas of wear such as around hatches, the front of the hull and the edges of the vehicle.

Brush used	Paint used
Sponge section	Humbrol 78 Cockpit Green

Step 4: Dark chipping

If you want to add some more wear to your chipping you can add some dark brown to represent the underlying surface of the vehicle as well as add a more three-dimensional effect to any chipping. We will apply these in and around the lighter chips. You can either paint them into some of the light-toned chips or alternatively use a sponge again around the previously applied tones to add the extra level of weathering.

Brush used	Paint used
Sponge section	Humbrol 251 Dunkelbraun

Dust and Dirt

Step 1: Dust base tone

At this point we will start to distress the paint on the vehicle. There are two ways to do this depending on the level of weathered appearance you want for the model. Following on from the previous layer of dust on the tracks, we will apply some dust to the upper areas of the vehicle.

We will again use an enamel wash here, although you could also use oil or clay washes. While you can do this with acrylics, there's much more work required and a much higher risk of the effect failing or at least not coming out as well as you would like.

This tank is intended to replicate the appearance of a vehicle with a significant layer of dust operating during the campaign of 1940 so I will apply a layer of dust around the lower areas on the sides of the hull, the bottom edges of armour plates and turret sides, and near any hatches and other flat areas. It's important not to let the paint go into any of the deep cracks and joins of the armour plates, although these can always be tidied up later. I prefer to use a stippling method and an older brush to apply this effect as it gives a more uneven, irregular finish that looks more natural. I've also applied some vertical lines to represent dust that has been affected by rain and water dripping from the vehicle.

Brush used	Paint used
Size 2 round	AK Interactive 4062 Light Dust

Step 2: Dust blending

Working quickly, once the paint has become touch dry we will blend that applied in the previous step. Using a soft, rounded brush lightly dampened with thinners, we will soften the edges of the areas of dust. For the vertical streaks we can use the same technique to blend most of the paint into the surrounding area using up and down strokes of the brush. Depending on how worn you want the vehicle to look, blend the paint less and you will have more prominent streaks. Blend more and you will have a more subtle effect.

You can do this with acrylic paints too; however, you will have to work with the paint while it is still wet and will also need to work in much smaller areas, say one side of the vehicle at a time, and use water or medium to blend the paint.

Brush used	Paint used
Size 2 round	White spirit or odourless thinner

Step 3: Adding depth

These next few stages are optional; however, they can be a good way to add additional depth and interest to the colours. Again we will use enamels, although any other paints can be used but with the limitations regarding acrylics already mentioned.

This time we will add a darker brown with an earthy tone to the areas we have already painted with the dust colours. This could represent damp areas of dust or thicker, fresh areas that have not dried out yet. You can

either apply the dark tone while the lighter one is still wet or leave it to dry overnight before coming to this step. If you apply it while both paints are wet they will blend into a more naturalistic effect; however, this might be too subtle to see the distinction. My preference, as I have done here, is to leave the paint overnight to dry and then apply the earth tone. Again stipple the paint on, applying it to the lowermost and densest areas of dust. I recommend doing this to the tracks and suspension too.

Brush used	Paint used
Size 2 round	AK4063 Brown Earth Deposit

Step 4: Blending earth tone

If we were to blend the paint as we did in step 2 of adding the dust effects to the model, we would risk removing some of the work we have already done. Instead we will just apply some thinner to the edges of the earth paint and allow the properties of the thinners to help the two paints blend naturally. Given the nature of what we are trying to achieve it does

not need to be a smooth blend, it just needs to get rid of the effect of two paints on top of one another.

Brush used	Paint used
Size 2 round	White spirit or odourless thinner

Desert Dust

Vehicles operating in the desert look quite distinctively dusty. This is a very simple effect to replicate, and here I will demonstrate two options for creating this worn appearance. The first will utilize a pigment while the second will utilize an enamel wash similar to the product used above. Alternatively you can use enamel washes or airbrush on the dust effect.

Pigment Dust

Really the simplest way to create a dusty effect on a model is to use dust! While I wouldn't recommend just using the dust off the top of the bookshelf for this, there are many weathering pigments available. Due to the nature of these products it's worth applying the dust as the very last stage of the modelling process as any varnishing can affect the pigments and handling the model during painting can strip the pigment off.

You can use whichever pigment tone you prefer. I'll be using a fairly strong, yellowy toned pigment here, but you could use anything from browns to greys. Be warned that this can make your desk quite messy…

Step 1: Dust application

First of all we will use an old brush to give the model a liberal coating of the pigment. I have not bothered adding a pin wash or texturing beyond chipping to this model as the dust will cover most of that work.

Brush used	Paint used
Size 2 round	Humbrol AV0013 Sand

Step 2: Blending dust

With the pigment in place you can now work it into the surface of the model. I have used a dry cotton bud to lift the pigment from most of the surface, leaving the recesses of the model appearing as if dust has settled naturally on the vehicle.

You could use a pigment fixer or white spirit to secure the pigment at this stage; however, I have elected not to do so here as it can alter the appearance of the finish. It is worth doing though if you're going to be handling the model regularly.

Brush used	Paint used
Cotton bud	N/A

Enamel Dust Weathering

These products are essentially like a loose pigment held in a carrier fluid. You can get products such as the one I'm using here, and also water-soluble clay-based washes. While the thinners are different, application and usage are both essentially the same.

Step 1: Enamel wash

To begin we will give the model a liberal coating of the dust effect. Depending on how dusty you want the vehicle to look, you can either paint the whole surface of the model or just focus the wash around the detail areas. As we will be removing most of the effect anyway, we will

keep the wash applied roughly around the details and the suspension of the vehicle.

Brush used	Paint used
Old size 2 round	AK Interactive AK4061 Sand Yellow deposits

Step 2: Removing excess paint

As before, we will now remove the dust effect paint. Give this about twenty to thirty minutes to dry and then using a suitable thinner, in this case white spirit, use an old brush to gradually remove the paint. It is important to wait for the paint to become touch dry but not actually fully cured for this step. If the paint is too wet you will simply end up mopping it up. If the paint has fully cured, say over twenty-four hours, then it will be too hardened to lift without risking damage to the underlying paint.

Stipple the brush on the flat surface, but use a dragging motion on the vertical plates to create some streaking dust effects.

Brush used	Paint used
Old medium-size dry brush	White spirit

Rust

While surface rust would be fairly rare on these vehicles, it could occur along areas of particular damage to paint and especially to exposed exhausts such as those found on some Italian and German vehicles.

Fresh rust has a fairly bright orange tone and then darkens down as it ages. It is also notable for having numerous tones ranging from greys to oranges and to browns, as well as having different textures. Given the size of some of the parts we will be working on, we will have to somewhat overemphasize this effect, although as with everything in this book use the techniques as a starting-off point and then experiment with your own preferences regarding paint. I will also demonstrate techniques for using both enamels and acrylics, although my personal preference is for enamels.

Step 1: Dark brown base

As a foundation for our rust effect, we will begin by painting the relevant area, in this case an exhaust pipe, dark brown. Dark grey is an equally valid alternative tone; however, I prefer to use a dark brown as it adds a nice degree of richness to the finish and complements the other tones we will be applying later.

As we are using enamel products over the top of acrylic, it is important to leave the paint to dry thoroughly

as the oil-based medium can damage the underlying paint if it has not fully cured.

Brush used	Paint used
Size 2 round	Humbrol 251 Dunkelbraun

Step 2: Light rust

While I am using enamel paints here, you can equally use acrylics if you prefer and you'll need an orange, an orange-brown and a darker reddish-brown. Enamels have a much longer drying time compared to acrylics, allowing you to layer each of the paints on top of one another while they are still wet, and they will diffuse and blend together via capillary action to give you a very nice realistic effect.

First of all we will stipple on a fairly heavy layer of light rust. You can use these products straight from the pot and do not need to thin them.

Brush used	Paint used
Old size 1 round	AK4111 Light Rust deposits

Step 3: Medium rust

While the previous layer is still wet we will use the same stippling motion to add the next level of texture to the rust. This time the rust product is a brownish-orange and we can just stipple it on over the top of the previous paint.

Brush used	Paint used
Old size 1 round	AK4112 Medium Rust deposits

Step 4: Dark rust

Finally we will stipple on a darker brown tone. This will really serve to bring out the texture of the rust and make it look good. The attached photos show the final effect of the rust once it has dried. The good thing

about enamels is that if at any stage you aren't happy with the effect you can wipe them off with a cotton bud or a brush soaked in white spirit or odourless thinners. This is also a good tone to use for rust streaks. I've painted a small dot onto the model and then used a dry brush to simply drag the paint down to create a streak of rust.

Brush used	Paint used
Old size 1 round	AK4113 Dark Rust deposits